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LBA

Adeline's triumph of the imagination

Saturn

Edge lifts the lid on Sega's gamebox

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Sega Saturn: running rings around the opposition?

Two days before this issue of **Edge** went on sale, the Sega Saturn finally hit stores in Japan, stealing a march on Sony's PlayStation by nearly two weeks.

But even if you flew out to Tokyo today, you couldn't get hold of a Saturn – every single unit has been sold into retail and has a Japanese buyer's name on it. In fact, there's a good chance that the casual visitor to Tokyo might be fooled into thinking that the launch of the Saturn had been delayed – the chances of actually seeing one in an Akihabara storefront are pretty slim.

And, although the Saturn is a must-buy piece of kit in its own right, Sega must also be commended for whipping up hype about the machine. In a series of unheard-of moves, the company has released early pictures and tech specs, answered technical questions about the hardware, provided the Japanese press with early game screenshots and generally acted out of character for a major Japanese hardware manufacturer.

But it has worked. Every Saturn has already been accounted for, while a few PlayStations remain unbooked – quite a telling coup for the oldtimer. Certainly this has been the most important hardware launch ever for Sega, but there are still considerable doubts over its performance. Developers in Europe and the US have decried the system for its lack of 3D prowess – it's still a powerful 2D engine, but its ability to create 3D graphics is dwarfed by Sony's integrated silicon. The Saturn's mismatched off-the-shelf chip architecture seems to be doing little to endear it to programmers.

With the 32X stopgap, Sega has at least bought itself some time to optimise Saturn software. But hands up who wants a 32X…?

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insideview





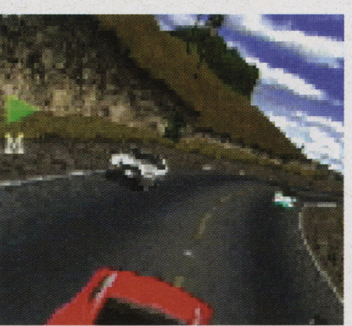
The **Negcon** joypad and a **PlayStation CD** (left), and the **Sega Saturn**



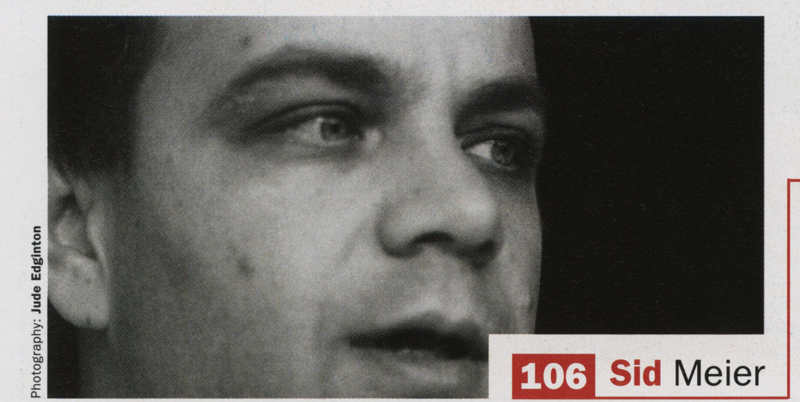


Clockwork Knight (left) and ***Super Street Fighter II X***





Doom (left) and ***The Need For Speed***



Photography: Jude Edginton

106 Sid Meier



The latest **news** from the world of interactive entertainment

PlayStation enters the home straight

Edge attends Sony's Tokyo pre-launch press show for the final PlayStation briefing

Even though interest in the PlayStation is already approaching fever pitch in Japan, Sony is taking no chances on the launch of the machine slipping by unnoticed. The company recently held a huge press conference in Tokyo to publicise its ambitious plans for the videogames market.

Held at the most luxurious hotel in the city, the New Otani, just a stone's throw from the Imperial Palace, the event was deliberately aimed at the mainstream media rather than videogames journalists. Sony's position as one of Japan's biggest and most influential corporations ensured that several television channels turned up and the majority of Japan's national newspapers sent representatives to witness its biggest product launch since the Walkman.

The highlight of the event was the long-awaited announcement of the PlayStation's retail price and Sony's supporting strategy for the machine over the coming months. The PlayStation's project manager, Terihusa Tokunaga, revealed that the basic machine will go onsale in Japan for ¥39,800 (£250). This means that gamers will be able to get hold of a PlayStation plus a couple of games for less than the psychologically important ¥50,000 figure (although the widespread high-street discounting that normally takes place looks unlikely, given the number of hardware bookings that shops are already taking).

Also divulged during the 40-minute conference was the PlayStation's final release date. After months of playing cat and mouse with Sega, Sony has confirmed that the →

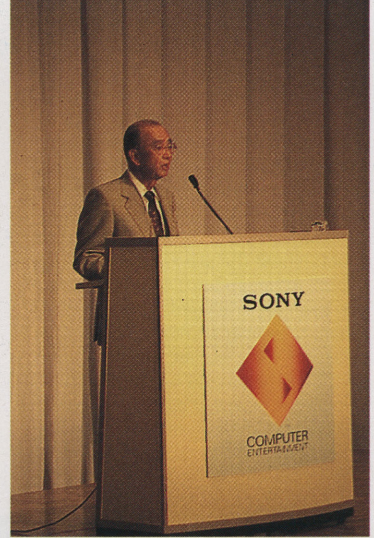




Over 1000 delegates attended the New Otani Hotel, Tokyo for the main event – Sony Computer Entertainment's huge press conference for the PlayStation launch

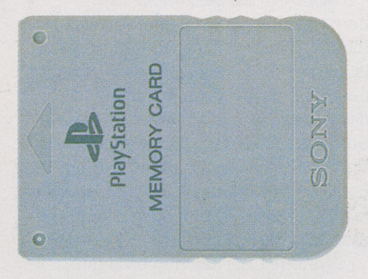


Teruhisa Tokanaka, vice president of Sony Computer Entertainment, shows the PlayStation's trademark black CD to delegates



SCE's Shun Fujishima, general manager of the international business division, talked at length to the press

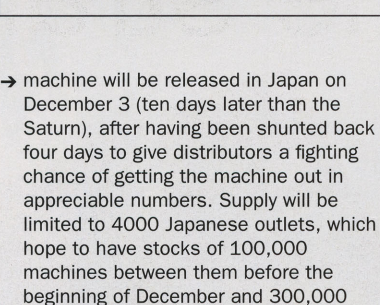




Small objects of desire: both the PlayStation's memory cards (above) and a mouse (top) will be available

Who is it?

Founders of a highly respected software houses, this pair have taken their company from strength to strength since the 8bit era. Their latest product is one of the most eagerly awaited games of the year



→ machine will be released in Japan on December 3 (ten days later than the Saturn), after having been shunted back four days to give distributors a fighting chance of getting the machine out in appreciable numbers. Supply will be limited to 4000 Japanese outlets, which hope to have stocks of 100,000 machines between them before the beginning of December and 300,000 before the end of the year.

Distribution is being handled by a company with the wonderfully Japanesey name of Happynet. During his speech, Mr Tokanaka stated that Sony could not rely on its normal distribution channels in Japan because it needed to get the machine into games shops. The company is aiming for sales of one million units in the next six months, with a further two million expected to be sold by year-end 1995.

As is usually the case with major Japanese launches, games shops are enforcing a strict limit of one machine per buyer (to be booked personally in advance, of course) and are also vigorously discouraging any form of export market. The few machines that might slip though the (presumably, not so happy) net will probably end up in Hong Kong. Given the high demand, it looks like the lucky importers who obtain them will be able to set whatever price they choose. Anyone expecting change from £1000 (especially after a couple of games are thrown in) are probably being optimistic.

In a bid to disassociate itself from the mistakes made by other hardware manufacturers, Sony was at pains to stress that eight games will be available at launch, with at least another 15 appearing before the end of December. Pressed on stylish matt-black CDs, they will all retail at exceptionally consumer-friendly rates – between ¥5000 and ¥7000. And it seems that it won't be just the dregs that makes it under the ¥6000 threshold, either. Sony's *Motor Toon Grand Prix* (an almost complete version was shown at the event and proved very popular) will be just ¥5400 (£35).



The man Sony put in charge (above). SCE's Terihusa Tokunaka MC'd the press conference which finally confirmed the PlayStation's arrival



One of the results of Namco's increasingly close links with Sony is the Negcon (above). ***Ridge Racer*** **and** ***Cybersled*** should both benefit

Continued next page

it is...
Chris and Tim Stamper. The Warwickshire-based duo founded Ultimate: Play The Game and proceeded to dominate the Spectrum market with classics like *Jetpac* and *Knightlore*. Today, as Rare, they are Nintendo's darlings

To ensure that the momentum of its software release schedule is maintained, Sony has now signed up over 250 thirdparty developers. Mr Tokanaka revealed that 700 development systems have shipped to companies around the world. Many of these, particularly the US and UK firms, still have a full year before their first releases next autumn (which is when the UK machine will be launched).

More immediate results are demanded from Japanese developers, though. Typical of the work in progress is *Tekken* (see page 30), a new coin-op based on the System 11 board developed via a joint venture between Sony Computer Entertainment and Namco. Exact details of the system have not yet been released, but the hardware is certain to be almost identical to the standard PlayStation.

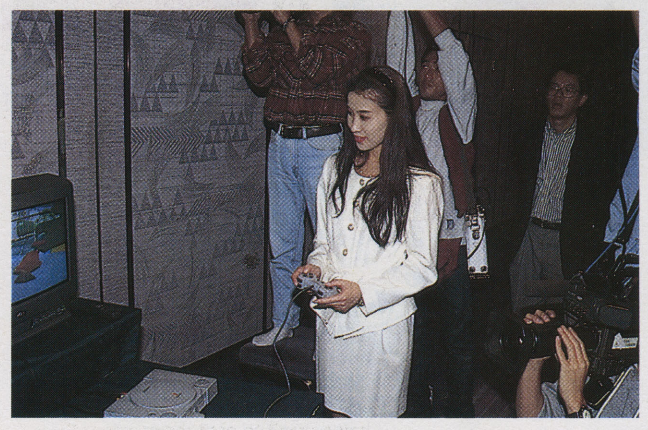
System 11 is pitched as a direct competitor to Sega's Titan arcade board, which is itself a souped-up version of a home console – the Saturn. The current fad, particularly in Japan and the US, of constructing mini-amusement parks has created the need for a steady turnover of new boards which are cheap and quick to construct in order to keep the punters coming. System 11 and Titan are designed for exactly this type of money-making, so in the near future it may become commonplace to see many PlayStation and Saturn games debut in the arcades before migrating downwards (with negligible loss of quality) to their home equivalents.

Namco showed off a new, dedicated PlayStation controller at the conference, developed under an exclusive deal with Sony. The 'Negcon' (from the Japanese word *nejiru*, which means to twist) takes design functionality to an extreme – it twists in the centre to allows players exemplary control of driving games without the need for expensive (and wobbly) steering wheels. With *Ridge Racer* onsale soon after the PlayStation launch and *Cybersled* following in January (the pad's suitability for the twoplayer tank game was particularly stressed), Namco seems to have the pre-Christmas peripheral market sewn up. The pad will retail for ¥5000 (around £30).

However, some people voiced their doubts about the standard PlayStation joypad. Although the 14-button design has been generally well received in Japan, a number of international delegates were worried about its small size. Sony has made it clear that the machine is aimed at 12-22-year-olds in its domestic market, but the generally larger hands of prospective PlayStation owners in the West may require a rethink on Sony's part.



Sony has designed the system's retail box to convey an air of stylish understatement. Not bad for a cardboard box



One of SCE's main attractions was their own cutesy racer, *Motor Toon Grand Prix*. Sony enticed Japanese celebrities to play for the cameras

Other accessories demonstrated include the PlayStation memory card, which will be used for saving games. The 128K device, which costs just ¥2000 (£13), slots easily into the machine just above the joypad connection and can access 10K of saved information a second.

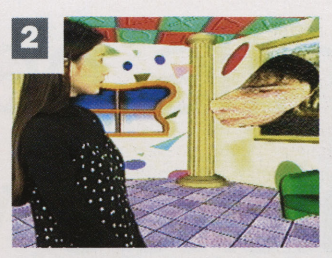
Also on display were samples of the boxes that the machine will be packed in. Continuing the industry's trend towards more identifiable packaging, the PlayStation cardboard features sepia-toned photographs, which seemed to be widely appreciated.

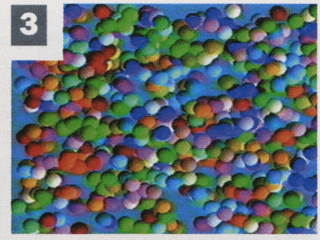
Following the presentation, journalists were let loose upon the assembled software for a few hours. Although most of the PlayStations weren't connected to televisions, Sony dispensed with security for one of the main attractions, *Ridge Racer*. Guests flocked to play the game that, more than →

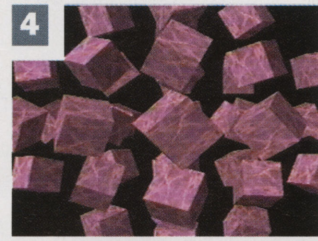
A near-final *Motor Toon Grand Prix* proved to be one of the event's most popular games. Polygons have never looked this cute before







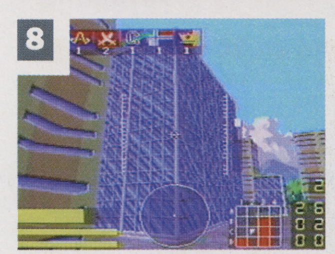














'Video PlayStation' (top left) was distributed at the conference and provided a typically Japanese preview of the PlayStation's graphic abilities and forthcoming releases. 1 The cartoon logo introduces the action. 2 The video's presenters (Japanese TV stars) meet each other. 3 The PlayStation sprite test shifts thousands of fully light-sourced balls. 4 Texture mapping is applied to rapidly and independently rotating cubes. 5 Gouraud-shaded dancing fighters – note the transparent floor. 6 The dinosaur that started it all – this is one of the PlayStation's most amazing demos. 7 *Ridge Racer* looks every bit a killer app. 8 *Metal Jacket* was one the many games that looked unfinished. 9 *Toshinden*'s smooth animation and scaling are exceptional

➔ any other, has given credibility to Sony's venture into the videogames market, and it elicited a fair few gasps. Although by no means arcade perfect (the frame rate is 30fps and the detail far lower), Namco's conversion is very slick indeed and a credit to both the power of the hardware and the dedication of Namco's development team. Namco's Youchi Haraguchi (interview in **Edge** 15) was also sighted at the conference, on a board representing thirdparty licensees.

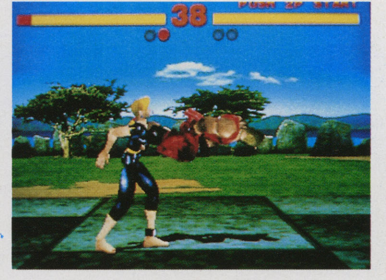
On a day when excited shouting was the norm, Sony was keeping noticeably stumm about news of manufacturing problems with the first run of PlayStation hardware. Rumours circulating among delegates focused on post-production checks that uncovered a number of flaws on the motherboard. Fortunately, a $30 billion multinational like Sony can afford to just bin them and start again.

Sony's new kit has already spawned a thriving ancillary industry, with a gaggle of new magazines ready to cash in on PlayStation hysteria. Players will have a choice of no less than six titles to choose from, four of which (Denpa PlayStation, PlayStation Magazine, PlayStation Tsushin and Hyper PlayStation) are published fortnightly, while the remaining pair (The PlayStation and PlayStation Magazine Monthly) will appear every month.

With this level of coverage assured even before the machine is released, the PlayStation is going to be very difficult to ignore. E



Alongside *Ridge Racer*, Namco's *Tekken* proved to be a hit with the show delegates. The coin-op uses the System 11 PlayStation board





***Tekken* (above) will be converted to the PlayStation for a March release. The game shifts a load of textured polygons realtime**

Sega fills next-gen hiatus with 32X

Sega's MD booster hits on schedule. But can it cross the credibility gap?

Sega Of America (headquarters above) isn't convinced of Saturn's benefits and sees the 32X as a means of preserving its Genesis market

When Sega announced the release of its 32bit add-on in spring 1994, it couldn't have foreseen the cool reception it would receive. While the Japanese videogames industry basks in the rising sun of new hardware launches, many believe that the US and Europe are quietly suffering the ignominy of being force-fed a 'Yuletide filler'.

To begin its pre-Christmas assault on the public's wallets, Sega has scheduled the 32X for a worldwide release in the first week of December. Priced at £170 – compared to a £400 3DO or £240 Jaguar – but without any free game in the pack, the 32X could be in for a tough ride over the next few months. Seen by many as overpriced and underspecced, the machine has to create a niche for itself – something that the Mega CD so spectacularly failed to do.

The 32X, which plugs into the top of an existing Mega Drive, requires a separate power supply and a bewildering range of connections to the base unit to function. Its twin 32bit Hitachi SH-2 RISC processors (like those seen in Saturn but operating at a lower clock speed) provide the bulk of the 32X's power, but a new VDP (video display processor) and the inclusion of a version of the SVP chip from the Mega Drive version of *Virtua Racing* also provide some back-up.

This hybrid architecture is known to have caused problems. Because the twin chips have trouble accessing RAM simultaneously, some developers initially abandoned using the second chip altogether. In fact, until recently development systems for both the 32X and Saturn included just one SH-2.

'It's basically a tiny version of the Saturn,' one developer told **Edge**. 'The processors runs a damn sight slower, for a start, and it doesn't have proper hardware assist for texture mapping.

'The 32X was built for America,' he continued. 'Sega are terrified of eroding everything they've worked for in the States. That's why they decided to concentrate on this instead of Saturn.'

The driving force behind the development of the 32X was Sega Of America, which is keen to capitalise on the huge installed userbase of Genesis owners and the general anticipation for 32bit gaming. SOA is hoping to shift 600,000 units by the end of 1995, and has earmarked $10 million to market the machine.

Sega Of

Japan is also launching the 32X. On sale two weeks after the Saturn, it's evidently more a PR exercise and quick money maker for SOJ than a serious bid to get the machine into every home.

With Sega now committed to no less than six hardware platforms – Mega Drive, Mega CD, 32X, 32X Sega CD, Game Gear and Saturn – consumers face a bewildering array of hardware from the same manufacturer.

Similarly, Sega's thirdparty developers are in the difficult position of having to decide the level of support they are going to give the 32X, before knowing if it has any chance of being a commercial success. →



The 32X plugs into the top of a Mega Drive, turning it into a 32bit machine. The UK model (top) and the Japanese version (bottom)

32X release schedule

The following titles are all slated for release on 32X. When they actually arrive is anybody's guess

Alien Trilogy	Acclaim
Apache	Domark
Brutal	Gametek
Clayfighters 2	Interplay
Castlevania	Konami
College Basketball	Sega
Corpse Killer	Digital Pictures
Cosmic Carnage	Sega
Doom	Sega
Ecco	Sega
Fahrenheit CD	Sega
Golf Magazines	Sega
Hoops	Virgin
Metal Head	Sega
Midnight Raiders CD	Sega
Mortal Kombat II	Acclaim
NBA Jam: Tournament	Acclaim
Night Trap	Digital Pictures
Pitfall	Activision
Race Drivin'	Atari
Shadow Of Atlantis	Sega
Slam City	Digital Pictures
Sonic	Sega
Star Wars Arcade	Sega
Stellar Assault	Sega
Street Fighter: The Movie	Capcom
Super After Burner	Sega
Super Motocross	Sega
Super Space Harrier	Sega
Supreme Warrior	Digital Pictures
Surgical Strike CD	Sega
Tempo	Sega
Virtua Racing Deluxe	Sega
Wirehead CD	Sega

Data stream

UK pre-Christmas TV marketing budget for the Game Boy: **£1 million**
Damages awarded against Nintendo over the Game Genie affair: **$15 million**
Number of pages that could fit onto one CD-ROM: **200,000**
Distance a standard CD's pits cover when layed together: **5km**
Average distance between human eyes: **65mm**
Sampling rate adequate for human voice: **11KHz**
Sampling rate adequate for FM radio: **22KHz**
Sampling rate adequate for CD audio: **44.1KHz**
Number of lines on a VHS tape: **260**
Number of lines on an SVHS tape: **400**
Nintendo's share of total videogames revenue in 1994: **65%**
Nintendo's share of total videogames profits in 1994: **82**
Nintendo's cash funds, as of March 31 1994: **$3.334 billion**
Nintendo's outstanding debts: **$0**
Nintendo's liabilities: **$1,427 billion**
Number of Jaguars Atari plans to have installed in the UK by the end of this year: **100,000**
Number of Jaguars Atari plans to have installed in the US by the end of this year: **400,000**
Number of PlayStations secured by importers at the time **Edge** went to press: **9** (ish)
Number of Commodore Amigas in worldwide circulation: **6 million**
Loss made by Commodore during 1993: **$356.5 million**
Number of LaserDisc players in the UK: **25,000**
Cost of Pioneer's CLD 2950: **£700**
Cost of *Jurassic Park* on PAL-standard CAV LaserDisc: **£50**

→ Developers will no doubt welcome a virgin market to compensate for the flagging 16bit business (it's alleged that Capcom has over a million unsold *Street Fighter II* cartridges gathering warehouse dust). But all those gearing up for the 32bit development cycle have assumed a CD format, and it's unlikely that many will welcome the cost and risk of continuing to manufacture cartridges.

Despite this, Sega says that it is developing 41 titles exclusively for the 32X, with another 48 being worked on by thirdparty teams.

'Saturn will be at a price point that will not make it a massmarket item. In terms of excitement it's Genesis and 32X'

Tom Kalinske, president, Sega Of America

Sega is keen to stress that the 32X is not a stopgap, but it concedes that Sega Of Japan regards Saturn as 'the biggest and most important hardware launch in Sega's history'. If Saturn is to launch in the US next spring with anywhere near the amount of momentum, anticipation and marketing support needed to take on the singularly focused Sony, then it will take 100% of Sega's effort. Either Sega isn't behind 32X for the long haul, or it's in danger of skimping on its preparation for the big battle ahead.

Of course, Sega argues that 32X and Saturn appeal to two separate markets; that promoting one doesn't mean sacrificing the other.

'Saturn will be at a price point that will not make it a massmarket item' Sega Of America's president, **Tom Kalinske**, told **Edge**. 'In terms of volume and keeping the category exciting, it's Genesis and 32X.'

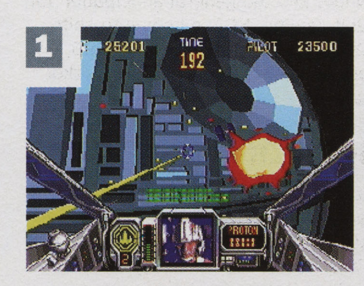
But with Sony threatening to launch the PlayStation at £300, one has to question either Saturn's competitiveness or Kalinske's definition of what price constitutes mass-market.

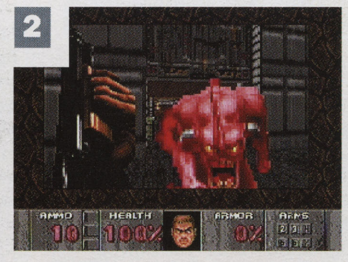
Either way, 32X is now cashing in all the brand loyalty Sega has nurtured. The marketing push behind 32X will presumably extend throughout 1995 and overlap Saturn's US and UK launch next spring. But consumers may simply become more confused, the stores will have to choose what systems to fill their limited shelf space with and Sega could find itself with one more of its platforms left out in the cold.

The bottom line is that the 32X offers Mega Drive gamers a way to boost their system's performance at a reasonable price (and an affordable Mega Drive/32X hybrid has to come soon). But given the high price of 32X software and the lack of significant support from thirdparty publishers, it may not be the bargain it first seems. And if the 32X causes Sega to take its eye off the launch of a not entirely trouble free Saturn, then the company could regret the day it decided to bet on too many horses. **E**

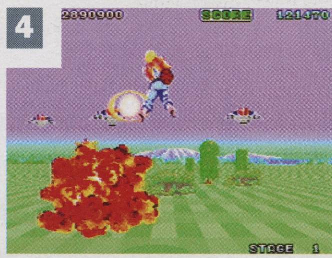
What is it?

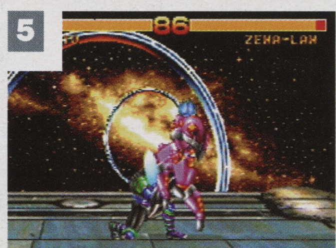
For decades regarded as the province of science fiction, this technology was named by Richard Gordon Gould in 1957. It has since become one of the driving forces behind advances in consumer electronics

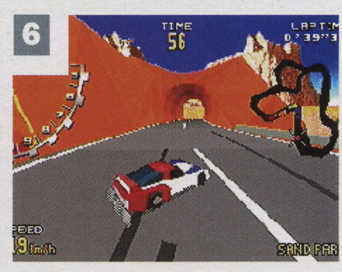












Sega's first wave of 32X titles is a mix of the old and the very old. 1 *Star Wars Arcade* moves well but has no texture mapping. 2 32X *Doom* has a smaller window than the Jag version. 3 *After Burner* looks dated these days. 4 As does *Space Harrier*. 5 *Cosmic Carnage* is an unremarkable beat 'em up. 6 *Virtua Racing Deluxe* is hardly a quantum leap

3DO faces mutiny, M2 speeds ahead

3DO's vapourware goes from strength to strength while 3DO Mk1 struggles

it is...

Light Amplification by Stimulated Emission of Radiation. Lasers operate by generating a precisely controlled beam of light. None of the new CD-based consoles could function without them

At a recent meeting of 3DO developers in the US, Trip Hawkins broke the news to Sanyo, Panasonic, GoldStar, Sony and Creative Labs that they faced combined losses of more than $200 million over the next 15 months if 3DO is to remain at a competitive price.

Not surprisingly, this news was extremely unwelcome. Disappointing sales have forced all involved in the 3DO project to rethink plans, and it's doubtful that many more 3DO machines would have been made had Hawkins not had a revenue-generating plan to ease manufacturers' burden.



3DO developers now face an additional $3 charge for every title produced. The price of 3DO software (top right) could be affected

Unluckily for games developers, he did. 3DO software houses now have to pay The 3DO Company $3 per copy of every game they make. This is on top of an existing $3 royalty that was part of the original 3DO deal. The new source of revenue will provide a 'Market Development Fund' for 3DO, half of which will go towards manufacturers' profits and half into continued advertising and promotion.

Many games publishers were shocked by the news, and a few question its legality. **Tom Zito**, president of Digital Pictures, commented: 'It makes me rethink developing for 3DO.' **John Eastburn**, chief operating officer for Crystal Dynamics, added: 'This would be a lot easier to swallow if 3DO had met its commitments in building an installed base before imposing a price increase.'

Many people will regard the new demand as a desperate measure from a company in grave difficulty. Trip Hawkins is certainly aware of the consequences – he realises perhaps more that anyone else the necessity of continued software support for 3DO. And if anything is sure to dry up support, it's imposing further disincentives to develop 3DO games.

'Some developers felt I misled them. They're going to call me lots of names. And I still love them,' said Hawkins. 'If I don't have software companies, that's one problem. But that's not as big a problem as if I didn't have hardware manufacturers.'

Although the public has yet to give 3DO Mk1 a vote of confidence, The 3DO Company is forging ahead with the development of its M2 accelerator. As revealed in **Edge** 14, 3DO has mustered the support of heavyweight companies like IBM and Motorola, as well as existing hardware partner Matsushita. In an effort to streamline manufacturing and keep costs low, most of the existing 3DO architecture now sits on one new chip called 'Anvil' – this includes the Madame and Cleo →



Capcom's oddly shaped six-button 3DO joypad will be welcomed by those planning to buy the superlative *Super Street Fighter II X*



'M2 is a real killer. It's basically a raw polygon processing accelerator which is roughly five times more powerful than Sony's PlayStation'

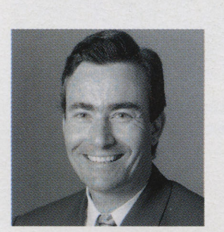
Bob Faber, senior VP, sales and marketing, 3DO



At a recent electronics show in Japan, Matsushita revealed this new-style 3DO

chips and Amy, the video encoder. The PowerPC technology central to M2's architecture will not (as previously thought) be complemented by on-chip custom graphics hardware. Instead, a new ASIC (application-specific integrated circuit) that handles graphics, audio and video, will sit next to the 66MHz PowerPC processor – which has been redesigned by Apple and Motorola specifically for the 3DO.

3DO has already claimed that M2 will deliver five times the PlayStation's 3D performance, and Trip Hawkins recently reiterated such claims in **Edge**'s new US sister magazine, Next Generation: 'We want to make a quantum leap that really delivers the power to generate over one million polygons a second. And that's what we've done. In fact, it's substantially more than than a million.'



'We want to make a quantum leap that really delivers the power to generate over one million polygons a second. And that's what we've done'

Trip Hawkins, CEO, The 3DO Company

Those who remember Trip's original claims (that 3DO was 50 times more powerful than a 16bit machine, etc) will be sceptical. But this time the 3DO boss is more willing to elaborate.

'Sony claims that its custom ASIC includes one million transistors, but our design has about 2.5 million transistors. Their chip runs at 33MHz. Our chip runs at 66MHz. So, in effect, if you're looking at the processor, we're running twice as fast and utilising two-and-a-half times more transistors. So it's roughly five times the processing power, and that's just in one chip. Now, their chip includes their CPU – we've got this whole PowerPC in addition to ours. So there's a pretty direct difference.'

If he's right, the PlayStation and Saturn could have some serious competition next year.

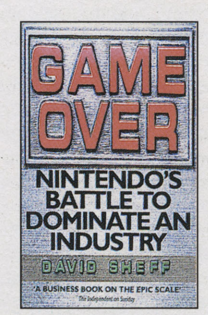
Goldstar launches 3DO

While the Sanyo 3DO machine recently shipped in Japan, the latest 3DO kit on the block in the west is Goldstar's machine. First shown at the Chicago CES back in June, the unit is now grey, instead of red.

To mark the occasion, the Korean company recently held an extremely lavish party in New York (Edge was invited but EM16's deadline took its toll). The system ships to US stores this month for $399. A UK launch is expected during 1995.

Essential reading

Game Over: Nintendo's battle to dominate an industry



- **David Sheff**
- Corgi, £5.99

ISBN 0-340-59982-0

Sheff's account of the Big N's rise and stall is remarkable on two counts. Firstly, it's a great book, detached and free of the slavish money/personality worship that mars so many 'business' books. Secondly, it's about a videogames company. Now the book has been updated in a new paperback edition, it's even more relevant to the state of the industry today.

Game Over's uniqueness is an indicator of how, hitherto, this multibillion-dollar industry has failed to penetrate the socioeconomic mainstream; how, despite the countless millions of consoles decorating the living rooms of the world, videogames (and their manufacturers) have been perceived as, at best, ephemeral and, at worst, disreputable. Now, perhaps, with the osmotic absorption of videogames into the body of multimedia, they will gain the cultural currency of, say, movies. If so, it is Nintendo that has largely been responsible.

In 1991, Nintendo had supplanted Toyota as Japan's most successful company. Incredible for a firm formed in 1889 to produce hanafuda playing cards. But playing cards it was, until the company fell into the hands of Hiroshi Yamauchi, a 'fiercely bright young man with the demeanour and build of a Rottweiler'. Hiroshi was determined to take Nintendo all the way but he didn't know where. Early experiments included individually portioned instant rice, a 'love hotel' and a taxi firm. But with the introduction of a young inventor called Gunpei Yokoi, things took a turn for the better. The next few years saw the profitable production of several electronic toys and, in 1977, in response to a strange phenomenon from America called *Pong*, Nintendo gave the TV Game 6 to Japan. Next stop the rest of the world.

They should have had it all, and for a while they did. They trashed the opposition in a single swipe with the Famicom, sewed up the market with brutal efficiency, then sucked thirdparty developers dry with draconian licensing terms. But more than this, 'there were those very serious men thinking about the content of play', and none more so than the guru of gameplay himself, Shigeru Miyamoto, creator of *Donkey Kong*, *Mario* and *Zelda*. But by the time the SNES appeared, the Mega Drive was all over the shop. Three years later Sega had a 50% share of the US and European market. 1994 and Nintendo look way behind cool. Why? Read and wonder.

Reality Lab: fast 3D for games developers

Edge reports on a PC tool that makes 3D graphics creation easier and speedier

British-based company RenderMorphics has developed an Application Programming Interface (API) that could dramatically reduce development times for games.

Reality Lab is a *Windows*-based authoring system that, like Criterion's *Renderware* and Argonaut's *BRender*, provides programmers with all the tools they need to create sophisticated 3D without the need for intensive technical programming or extra hardware.

Reality Lab is packed with realtime 3D effects, including Gouraud and Phong shading, specular highlighting, face-by-face texture mapping, true-colour (RGB) mode, transparency, picking and z-buffering. Although these are all available in software without hardware acceleration, the program also supports 3Dlabs' GLINT chip (see **Edge** 15), providing the potential for even greater 3D performance.

Says **Servan Keondjian**, RenderMorphics' co-founder and R&D director: '*Reality Lab* gives developers the time to work on the gameplay and the artwork – the look and feel of the game. That's what they want to do.'







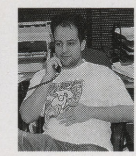
This demo game is constructed from Gouraud-shaded polygons and runs at 640x480. All the objects are lit using realtime RGB effects

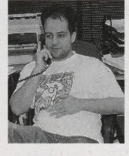
The history of *Reality Lab* can be traced back to 1989, when Keondjian was studying astrophysics at Imperial College, London. During stints on the road as pianist for a rock band, he spent all his spare time sitting in the back of the minibus working on the 3D groundwork for what is now *Reality Lab*.

'I was always more interested in 3D than quantum mechanics,' he laughs. 'I had this great technology. We always knew we could make 3D go fast and then we just built it into the system.'

Reality Lab's main advantage is speed. One user told **Edge** that '*Reality Lab* produces 3D graphics on a Pentium/90 that are at least twice as fast as on the PlayStation.' The program also increases the ease of cross-compiling (running code from one machine on another).

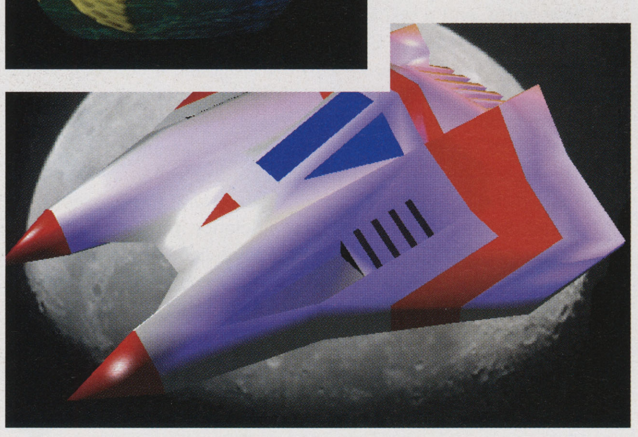
Another of *Reality Lab*'s strengths is its hierarchical command structure. At any given level there is a 'parent' object which can be linked to any number of 'children'. Apply a movement to the parent and the system deals with →





'It gives games companies the time to work on the gameplay and the artwork – the look and feel of the game'

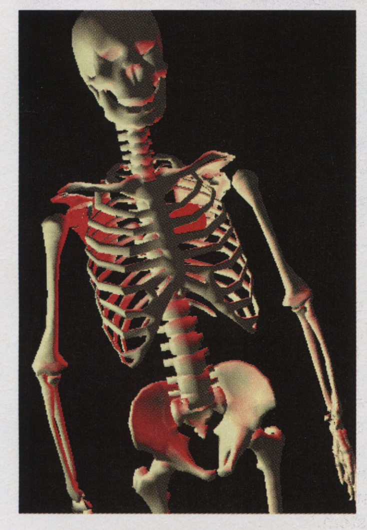
Servan Keondjian, R&D director



The benchmark 'Utah Teapot' (inset) is texture mapped with a fish motif. Purple, blue and orange spots light this ship in realtime (above)



Reality Lab's impressive realtime rendering power is shown by this revolving chrome-textured head



Reality Lab supports pixel-accurate picking – the red spotlight in the ribcage can be selected even though it's behind the skeleton's plane

→ its children, saving you time-consuming programming for every object. For example, if you were animating a character's arms, you could apply the same movements to the hands and fingers with the minimum of effort.

The ultimate test for a system like *Reality Lab* is games programming, and this is where RenderMorphics is focusing its marketing efforts. The company has already attracted major clients such as Virgin and Mindscape, but it refuses to confirm any link with Sony – even though it is widely accepted that Sony is on the brink of signing up for the system. *Reality Lab* could make PlayStation games even faster than originally envisaged.

Kate Seekings, RenderMorphics' sales and marketing director, denies that this will result in software houses churning out similar games. 'Imagine asking 20 teams to build a house and giving each planks of wood, a saw and some nails,' she says. 'Would they build 20 identical houses? Of course not. We've seen many projects in development using *Reality Lab* and all of them are completely different.'

Reality Lab is intended to provide a basic framework on which users can build. 'We supply a lot of our source code examples to customers and they manipulate it and write their own, more specialised tools to fulfil their requirements,' says Keondjian. The result is a modular system, with programmers using only the parts they require, thus saving memory and time.

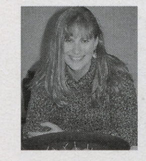
Just as important as raw power to the success of *Reality Lab* is a streamlined front end. 'The first thing we did after forming the company [in 1991] was to design a very intuitive 3D interface,' recalls Keondjian.

Users attest to the system's ease of use. 'Given a knowledge of *C* and viewing matrices in a 3D context, plus some *OpenGL* basics, the source code provided gives hard results in a few days,' was one verdict.

RenderMorphics accepts the importance of cooperation in today's competitive market. Matrox and Cirrus Logic graphics cards are supported as well as GLINT, and Creative Labs recently signed a deal allowing it to use *Reality Lab*'s graphics libraries.

RenderMorphics is committed to advancing development techniques. 'We're encouraging people to use 16bit (65,536) colour at 640x480 resolution,' says Seekings. 'It's the way it's going. With game technology, you just can't look back.'

With Pentiums rapidly becoming the norm, this kind of foresight is what the games industry needs. **E**



'We're encouraging people to use 16bit colour at 640x480. With game technology, you just can't look back'

Kate Seekings, sales and marketing director

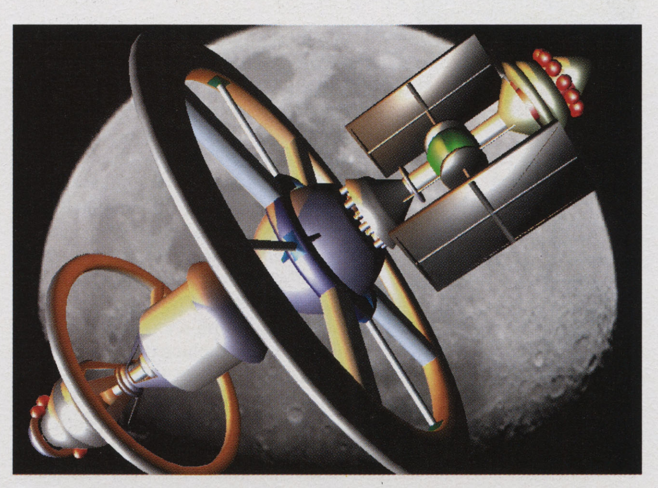
Where is it?

This building in a city south-west of Tokyo is home to a videogames company renowned for playing its cards close to its chest. The firm has dominated the market for years but now faces new competition

Reality Lab benchmarks

Mode	486/66 VLB	Pentium/ 60 PCI
	(polygons per second)	
Flat-shaded	60,000	100,000
Gouraud-shaded	56,000	92,000
Phong-shaded	30,000	50,000
Flat-shaded texture	45,000	80,000
Gouraud-shaded texture	39,000	70,000
Phong-shaded texture	20,000	36,000
Lighting and transformation only	135,000	220,000

All benchmarks taken using 400x400 viewport, 3,700-polygon Utah teapot (300 pixels across) rotating about y axis, lit with a single-direction light source



Full z-buffering is available in *Reality Lab*. Objects are clipped even if passing behind complex constructions like this revolving space station

Gamehouses flock to **Silicon City**

SGI's Japanese show proved popular with game producers

It is...
The Kyoto HQ of Nintendo, a company which started off manufacturing playing cards and has since become the powerhouse of the videogames industry. Its position is now threatened by Sony

Over the past year, the relationship between games producers and the purveyors of high-end graphics technology has become increasingly cosy. The Nintendo/Silicon Graphics deal is the highest-profile example of the growing collaboration between the two fields, but there are many other graphics specialists looking for a slice of the lucrative games market, and just as many entertainment companies searching for new developments to give their games a technological leg-up.



Silicon Graphics' new kit (above) was the show's central attraction. The Indy Extreme sounds more like a surfboard than a computer...

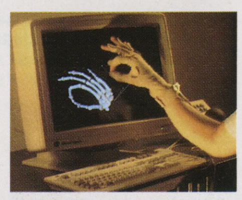


At Silicon City (top), image-generation professionals mingled with interactive entertainment specialists (above)

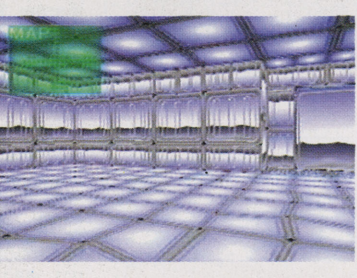
So it came as no surprise to see the recent Silicon Graphics show in Yokohama, Japan, attended by gamehouses eager to see what the leading-edge computer technology company had to offer. The theme of 'Silicon City' was the integration of high-end graphics with affordable home entertainment, with Rare's *Donkey Kong Country* well-employed as a 16bit taster of what new technology can provide for games.

The focus of the show was a range of new Silicon Graphics hardware. Indigo Extreme, Power Indigo and Power Onyx are obviously upgrades rather than revolutionary steps forward, but they generated excitement nevertheless. Also appearing for the first time was the latest version of the Challenge fileserver. Based on a MIPS 8000 chip running at 200MHz, this hardware made almost every other piece of technology at the show seem positively antedeluvian.





The ubiquitous Sony was also present, a month before the launch of the PlayStation in Japan. The company was represented on this occasion by its Sony Music Entertainment division, which was touting the PlayStation game *Kileak The Blood*, a futuristic firstperson 3D robot shoot 'em up laden with pre-rendered cut-scenes. The SME connection is due to the game's score, but the dazzling reflective lighting effects and realtime texture mapping on offer made it relevant to anyone with an interest in the future of game graphics.



And for ¥3,200,000 (about £20,000) you can be the proud wearer of a Cyber Glove. This device was developed by SolidRay to facilitate the manipulation of virtual objects such as molecules and architectural models. Add an Onyx and you've got one hell of a *Doom* set-up...

RaySolid's Cyber Glove (middle) costs a cool £20,000 (middle). Sony was represented at the show by *Kileak The Blood* (above)

US and UK fight over Amiga's future

The battle for control of the Amiga still has no clear winner

Chickenhead is no more

Irrespective of the outcome of the sale of Commodore, the ill-fated 'chickenhead' logo is doomed. CEI will continue trading under its name, and the logo has already been dropped by the remnants of the UK operation. Any new company rising from the ashes of CBM International will favour reliance on the Amiga name and branding – 'Amiga International' has already been suggested as a new company herald.

Since **Edge**'s last report on the status of Commodore (issue 10), all promised deadlines for a resolution of the company buy-out have been and gone.

The Bahamian receivers, Touche Ross, have compared the liquidation and consequent sale of the multinational company to the Robert Maxwell/Mirrorsoft debacle. For instance, patents, licences, logo copyrights and ownership of remaining stock all belong to different parts of Commodore International, split between divisions in the US, UK and Germany.

But while the UK management buy-out team – headed by joint-MDs David Pleasance and Colin Proudfoot – has been evangelising to anyone who will listen on a future version of Commodore run entirely from the UK offices, the other main competitor in the race has chosen to keep quiet.

CEI (Creative Equipment International), which is based in Miami, Florida, broke its silence to speak to **Edge**. **Alex Amor**, president of CEI, stated that he is so confident of securing the Commodore deal that its manufacturing partner is getting ready to begin production of A1200s, A4000s and CD^{32}s.' He explained that tooling up now would save 35-40 days when the deal is finally signed.



Producing the A1200 in volume is vital to the success of the Amiga line. But who will be responsible: Commodore UK or Miami-based CEI?

Amor went on to say that 'CEI has the interests of the UK market in mind. We understand that the UK is an important market and will do our best to support that market.'

This comes as something of a surprise given that David Pleasance believes the right to carry on the Amiga line is as good as in his hands.

At last month's Future Entertainment Show, Pleasance addressed a crowd of loyal Amiga users, publicly stating that he believed the MBO would succeed in its bid and that production of Amiga hardware would begin in the new year.

Future plans for the new company, he explained, involve tripling the R&D team in the US, and ploughing ahead with a RISC-based Amiga which would be 'far more powerful than anything our competitors have planned.'

It has been rumoured that the failure of the UK management buy-out – if, indeed, it has failed – was due to difficulty in transferring funds from its Far Eastern backers. **Edge** expects the final chapter of this long-running saga to appear next issue.



Spearheading the UK management buy-out of Commodore are the joint MDs of the UK operation, David Pleasance (left) and Colin Proudfoot

Amiga heads RISCwards

The Amiga line has already embraced 32bit technology, although the lack of custom hardware has not endeared the A1200 or CD^{32} to gamers in search of visual thrills.

The next generation of Amigas will be based on Reduced Instruction Set Computer (RISC) technology, run *Windows NT*, and possibly be front-ended by the AAA chipset, the fate of which has yet to be decided.



Motorola's RISC chip might well play a major role in future Amigas

This month on EDGE

Welcome to the **Edge** experience – a rollercoaster ride through one month in the life of the world's best games journal

Edge is produced by Future Publishing, a company which was started in 1985 by a man called Chris Anderson in his house with a £15,000 bank loan.

Nine years and 34 magazines later, Future has just been sold to the New Entertainment division of media conglomerate Pearson for £52.5 million. With over £30 million in his personal fortune, Chris Anderson has now set his sights on the US and will be trying to do a similar job on GP Publications, which produces Game Players and US versions of PC gamer and CD-ROM Today.

Big-hearted Chris made a provision for every Future employee to receive shares in the company, so the offices are now ringing with the sounds of new CD players, TVs, motorbikes and loud clothes.

Coincidentally, the new chairman of Pearson New Entertainment just happens to be Nick Alexander – ex-head of Sega UK and subject of An Audience With... in **Edge** 11. Future plans (no pun intended) include launching lots of new magazines, moving into more hobbyist areas, and the extension of Future's CD-ROM and Internet ventures, making the company truly 'multiple media', as Nick prefers to phrase it.

Sadly, **Edge**'s idea for 'Sci-Fi Naked Birds And Muscle Car Monthly' has not passed the board's initial screening.

A 'farewell Chris' party in a local field was responsible for a cut forehead with copious amounts of blood, one stomach pumping, an amazing firework display, several mismatched pairings, and many bad heads the next day.

So long, Chris, and thanks for all the cash...

The 1994 Future Entertainment Show invaded Earls Court 2 during October, and although considerably smaller than previous events, still managed to attract over 30,000 punters.

Stars of the show were the European unveiling of the Sega's 32X and, nestling between the two halves of the **Edge** stand, a pre-production PlayStation on loan from Sony.

Unfortunately, although it was an exact replica of the real machine, the pale grey box had none of the internal workings needed to make eyes loll and jaws drop. Otherwise **Edge** would have made off with it.

However, after some time spent fondling the joypad (on this occasion not distracted by sexy graphics), the office consensus is that either the Japanese have minute hands or the damn thing's too small.

Despite this, **Edge** booked a couple of machines in Japanese game shops courtesy of Tokyo bloke Nicolas di Costanzo.

Now That's What I Call **Edge** Music 16:
'Fat City' (Shawn Colvin)
'Snivilization' (Orbital)
'Whatever' (Aimee Mann)
'No Need To Argue (The Cranberries)
'Space Cowboy' (Jamiroquai)
'Definitely Maybe' (Oasis)

Datebook

November

New York Virtual Reality Expo November 29–December 2. Tel: 010 1 203 226 6967
Supergames November 30–December 4, Paris. Tel: 010 331 42 00 33 05

December

UK VR-SIG Conference December 1, Reading. Registration details from Jakie Koster at Division. Tel: 0454 615554
ORIA '94 December 5-6, Marseille, France. Tel: 010 33 9105 5000
Christmas Computer Shopper Show December 1–4, Olympia, London. Call Blenheim Online: 081-742 2828
On-Line And In Control December 3, Birkbeck College, London. Day course dealing with women and IT. Call Elaine Kitteringham, Birkbeck College: 071-631 6674
MVA '94: IAPR Workshop on Machine Vision Applications December 13-15, Kawasaki, Japan. Call Mikio Takagi: 81 (3) 3479 0289. Fax: +81 (3) 3402 6226

January

Winter Consumer Electronics Show January 6–9, Las Vegas Convention Centre. Tel: 010 703 907-7600
Milia '95 Friday, January 69, Palais des Festivals, Cannes. Tel: 010 331 44 34 44 44
ATEI January 24–26, Earls Court, London. Contact Peter Rusbridge on 071-713 0302
IMA January 25–28, The Fairgrounds, Frankfurt, Germany. Contact Blenheim Heckmann GmbH. Tel: 010 49 211 901 9127

February

Taiwan Amusement Exhibition February 8–12, CETRA Exhibition Hall, Taipei, Taiwan. Contact Creative International PR on 010 886 2321 5098
Blackpool Amusements Exhibition February 21–23, Winter Gardens, Blackpool. Contact Janet Fairgrieve on 0253 25252
Electronic Imaging February 5-10, San José, California. Contact IS&T/SPIE on 010 1 206 676 3290
Virtual Reality World '95 February 21-23, Stuttgart, Germany. Tel: 010 43 51229 5760

Show organisers: if your show isn't listed here, it's only because you haven't told **Edge** about it. Do so on 0225 442244, or fax us on 0225 338236, or send details to **Datebook, Edge, 30 Monmouth Street, Bath, Avon BA1 2BW**

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viewpoint



Write to: **Edge** letters, 30 Monmouth Street, Bath, Avon BA1 2BW. E-mail: edge@futurenet.co.uk

What is it with you lot? Your high-and-mighty 'nothing impresses us' attitude is the most negative I have ever come across and very typical of British journalism. If I listened to everything you say I would end up buying nothing. The moment something new is on the cards, you slate everything currently available. No doubt when these new beasts are released they will get a canning by the mighty gods of **Edge**. How are new machines going to succeed when you always encourage people to wait for the next big thing? It's not as if many of your predictions are correct: you have often had to eat your words (but at least you do, I suppose).

Why don't you lighten up a little and get behind the industry. It's obvious that there won't be an industry standard, but that doesn't mean that the weakest machines must instantly fail. Why can't you introduce some balance with quotes like, 'We're not perfect and these are the opinions of one or two people only which could well be wrong'?

Apart from that, everything is just fine. Now over to you to demolish everything I've just said with clever wording, knowing full well I can hardly argue back.

G Wilson, Portsmouth

Edge isn't easily impressed, but conversely, if something is genuinely outstanding it isn't afraid to say so. (Is that clever enough for you?)

I am writing to raise an issue regarding the recent unfortunate demise of Commodore. I am not one of the 'Amiga-wailers' we have all come to hate. I would like to address another matter entirely, namely the actual future of interactive entertainment. You see, with the end of the Amiga, we're seeing the last of a long line of cheap but powerful home computers for kids go out of production for good.

I don't feel old at 23, but I remember the time when the Sinclair ZX81 started it all. And had it not been for the cheapness of this pioneering home computer and its successors – the Spectrum, C64 and Amstrad – I and a lot of my friends would never have got into things like computer graphics and programming. Primitive as these machines may look in hindsight, they offered something that no platform of today does: affordability (for kids) and, most importantly, the incentive to do something on your own.

Nowadays, when someone of 12 or 14 looks at his allowance to decide what machine to buy, there really exists little choice for him: a PC, with all its undoubted usefulness (or a Mac, with even greater usefulness) is either too new and expensive, or it's old and obsolete. And with the Amiga and similar products out of production, there is really nothing left but the consoles. And it's even doubtful whether the so-called next-generation consoles qualify; for all their apparent splendour, they represent a vast increase in price over their dated, but still popular siblings, the Segas and Nintendos.

So, do these machines have creative potential? Are they accessible, with programming abilities? Do they even have an interchangeable file format? Not Sega. Not Nintendo. Not 3DO.

There are even today lots of great creative talents working out of their bedrooms all over Europe. I've seen some of their demos; when these guys mature, they're going to make the Doom engine look like it's on Valium. This raw talent was nurtured on the cheap but powerful calories of the Amiga. Now where will these spontaneous talents come from? I seriously doubt that Sega or Sony will found schools to teach kids programming and game design. As far as I can see, it is people from my generation who are running things now, whether they are designers and coders in the depths of murky games dens or the prominent writers of great mags like **Edge**. This is all great, and we're still young (or so we like to think), but isn't the industry being a tad shortsighted by cutting off its own lifeblood this way?

Rasmus Keldorff, Aarhus, Denmark



Rasmus Keldorff argues that machines like the Amiga are the lifeblood of the industry

Commodore's future is still uncertain, but, as you suggest, much UK development talent was honed on cheap and cheerful technology like the C64 and Amiga, so it would be sad to see any eventual demise mirrored by a creativity slump. The PC and Mac do offer some opportunity for the home computing class of the mid-'90s but, admittedly, at a price beyond most parents' budgets. Perhaps the answer lies in waiting until this technology is accessible enough for youngsters. The industry needs innovators (like Adeline's Frederic Raynal and Bullfrog's Peter Molyneux) to keep it alive, and if affordable creative platforms for the home are no longer widely available, the flow of self-taught geniuses could peter out.

By their nature, reviews are subjective. One man's meat is another man's poison. Your magazine has an absolute right to express its opinions. Blah blah blah.

I've finally managed to get hold of *AVP*, and I can honestly say that your review was the most extraordinary exercise in bullshit I've read for a long time. It was so crammed with knee-jerk smugness and blistering illogicality that it's hard to know where to begin. I

suppose a list will do the job.
1. 'The front end is incredibly slow.' Damn Rebellion for its insolence! Wasting five seconds of our lives is unpardonable!
2. 'There's no real strategy in *AVP*.' Perhaps we're just using different definitions of strategy or maybe I'm just a crap gamesplayer, but I found that if I didn't plan the way I used medikits and ammunition, I wound up dead.
3. 'When you kill an Alien, its corpse creates an obstacle.' Yeah, so lure them out. Use medikits wisely. Use... strategy!
4. 'In *Doom* you never know what's around the next corner – in *AVP* it's usually nothing.' Really? Maybe I could borrow your cart, because on mine the Aliens are bloody everywhere.
5. 'Some atmospheric music would be nice.' Nice. Yes. Sod sinister. Sod the dull throb of distant engines and the shock of a shrieking Alien or whispering Predator. Let's get nice.
6. *Wolfenstein* seven out of ten, *AVP* four out of ten. Good call, **Edge**. Reactionary nostalgia is what pushed forward the boundaries of gameplaying.
7. '*AVP* is a lumbering imitation of *Doom*.' Imitation in as much as *Sonic* is an imitation of *Mario* and *MK* is an imitation of *SFII*. *Doom* has unquestionably set a standard in the firstperson-perspective genre. But lumbering? **Edge,** are we being just a little bit precious? Oooh! Take your cotton-picking hands off my format! Don't you dare change the gameplay or I'll scratch your eyes out!

In concluding, let me outline a couple of risks. As an owner of a struggling console, I run the risk of being over-defensive. I forked out hard cash for my Jaguar, and I don't want to see it fail. So, just to qualify my position, let me state that I've been seriously disappointed by the software Atari has produced. With the notable exception of *Tempest 2000*, the games have been atrocious. *Brutal Sports Boreball, Boreden, Dino Bores, Trevor McBore* and, yes, even *Wolfenbore* – all of them utter crap.



Garciano Sol is slightly unhappy about Edge's appraisal of *Alien Vs Predator*

As for you, **Edge**, you run another risk. You are streets ahead of the other games mags. Your readers know it. Sadly, so do you. Your risk is smugness, a kind of 'more adult than thou' approach to gaming which doesn't shirk from standing, reed-like, against the hurricane of popular opinion. The way I see it, *AVP* presented an irresistible target. Everyone had been talking about it for an infuriatingly long time and poor old Atari had pinned its hopes on its success. Your reviewer couldn't wait to be the one to stick the knife in.

Garciano Sol, London

Oh dear. Edge seems to have touched a raw nerve here. God forbid that anyone should dare to criticise the Jaguar's flagship game. Your implication that **Edge** should have pulled its punches simply because of Atari's precarious position in the console market runs contrary to everything the magazine stands for. And the accusation that anti-Jaguar prejudice was the cause of *AVP*'s low mark is ludicrous – **Edge** didn't hear anyone complaining when it gave *Tempest 2000* nine out of ten in issue 8. Have you considered the possibility that **Edge** simply didn't like *AVP*? Maybe it's a game that only shows its true colours when the lights are turned down, the sound is cranked up, and *Doom* is switched off on the neighbouring PC. Well, Jaguar owners will soon be able to choose between both experiences – id's classic arrives on the Jag in December. As for *AVP*, **Edge**'s decision is final and no more correspondence will be entered into.

Little Big Adventure **is a good example of how text can be used in a game without any loss of atmosphere (see letter from Michael Ault)**

I am a loyal Amiga A1200 owner who is also deaf. I am concerned about the way CD-based games are going. I would like software development companies to remember that there are deaf/hard-of-hearing people who also like playing games. When you use speech samples in games, please add text to it. Can you watch a foreign film without subtitles and understand it without knowing the language? Of course not. Well, this is exactly how I feel – and I can hear a bit, whereas there are others who can't hear at all.

What I don't want to see is games in the future replacing text with sampled speech. I don't mind music or speech in games, but text must not be killed off. Programmers: I'm sure you remember how to display speech – it was probably the first thing you ever learned.

Michael Ault, Walsall

Adeline's *Little* *Big Adventure* (page 62) shows how it should be done. Speech (which is sampled and played through the soundcard) is accompanied by onscreen text and there's never any doubt about anything you're told because it's right in front of you. Let's hope that other developers follow suit.

I read Matthew Pass's letter in **Edge** 14 and had to laugh. I actually thought John Ritman was being generous in saying that *C* can reduce a 50MIPS machine to 10-20MIPS. I would have said that it was more like 5MIPS.

Even with a PowerPC or a Pentium, it is wrong to say that a good *C* compiler is able to do a better job than pure assembly code. It just isn't true. Also, *C* source takes up a lot more room than assembly does performing the same routine, which is why you need loads of free hard disk space if you have a PC – or any machine, for that matter.

In my opinion, *C* programmers use it because they haven't got the talent to program in assembly and they wouldn't be able to blame the hardware for the slow performance of their software if they did.

On another matter, I completely agree with N M Smith's letter in the same issue. Good games do seem to appear about 18-24 months after the hardware (although I wouldn't say that *Super Mario World* was good, as your reply stated). And speaking as a Jaguar owner, I think that Atari should have had one or two more games ready with the release of the machine. I know there's good stuff in the pipeline, but this doesn't make up for the meagre offerings available at the moment.

Noel Wallace, Scotland

The Japanese are encouraging development in *C*, so it's rapidly becoming the standard language for the new RISC-based machines. If the distinction between *C* and assembly was as clear-cut as you imply, there would be a huge difference in the speed of *C*-coded games and assembly-coded games. But generally there isn't. It's all down to the skill of programmers.

Super Mario World might not be the best indicator of SNES performance, but suggesting it isn't a good game is tantamount to blasphemy.

During the past few issues I have become somewhat confused about your attitude towards the 3DO. In the supplement you supplied with issue 12 you seemed to fully endorse the

Continued next page

machine. Yet in the magazine you appeared to be be rather more sceptical. In reply to S Grierson's letter you wrote: '3DO has been caught out in the cold.' Is this merely a clash of editors' opinions (I noticed that the editor of the supplement was one Mr S Jarratt)?

You compare 3DO with the PlayStation. I admit that the PlayStation is better than the 3DO in terms of specs, but what you forget is that one of the largest and most successful games companies in the world (Electronic Arts) is strongly supporting the 3DO. The general opinion in your magazine is that a machine is only as good as its software. Well, the software is only as good as the people who make it.

A longterm problem I can see with the PlayStation is that most of the games so far are Japanese. Personally, I cannot see Japanese-style graphics and gameplay catching on over here – *Motor Toon GP*, for example, looks very Japanese. Why do you think most of the games you see in Japan never appear elsewhere? I noticed that in **Edge** 14 there were hints that Sony would be difficult to deal with. Even Peter Molyneux admitted that 3DO were easier to work with than Sony. This may turn prospective developers away in the West.

The 3DO games I have sampled so far are impressive – particularly Electronic Arts and Crystal Dynamics games – and seem to be what the British public want. As other developers jump on the bandwagon there will inevitably be more variety. I now firmly believe that the 3DO can and will become one of the major powers in videogames.

James Hinchcliffe, Bristol

3DO is acquiring a range of truly spectacular software, although many titles (eg *Alone In The Dark*) still fail to take full advantage of the hardware. The points you make seem to be largely a matter of taste – you may prefer the look and style of 3DO *Road Rash* to, say, *Motor Toon Grand Prix*, but for other gamers the opposite will be the case. Suggesting that Japanese games won't catch on over here is ridiculous – admittedly, there are many titles in Sony's catalogue that probably won't make the journey, but the Japanese are still the best designers of most types of console software. Besides, with EA and hundreds of US and European developers on board, Sony's software base looks set to be as broad as anyone could hope for.

In reply to J Cafferty's comments on the accuracy of arcade conversions (**Edge** 13), it is unreasonable to expect a console costing £400 or less to match the performance of a £10,000+ arcade machine, especially in terms of graphics and audio capability. Accuracy of conversion can only fairly be measured in terms of gameplay (something which many arcade games are lacking in). It should also be noted that companies like Sega are unlikely to release consoles capable of matching coin-op performance, because such a machine would render coin-ops (other than those relying on gimmicks such as hydraulics) obsolete. Incidentally, *Out Run* (as mentioned in J Cafferty's letter and your reply) is a prime example of the the biggest problem facing videogaming today: the game consisted of superb graphics and sound with minimal gameplay. While such superficiality is fine for arcade machines, this is a practice that should never have been allowed to filter down to home machines.

On the question of the looming format war, previous standards have been won and lost not on the basis of whose system was the best and most advanced, but on whose reached the market first (remember VHS versus Betamax, Sky versus BSB?) so maybe Jaguar and 3DO will surprise us after all. But then, having just bought a 3DO, I would say that…

Bryan Morton, Bangor, N Ireland

Many arcade games are far too shallow to provide significant entertainment once they're translated onto a home format. *Virtua Racing* on the Mega Drive is an exception, although it still pales next to Nintendo's *Wildtrax* (aka *Stunt Race FX*) which is visually clumsy but far more enjoyable. And it's quite possible that an original PlayStation game like SCE's *Motor Toon Grand Prix* will trounce Namco's *Ridge Racer* in terms of all-round playability. With the exception of one-on-one games like *Street Fighter II*, arcade games rarely prove as enjoyable in the home without significant changes and gameplay enhancements. The multiplayer potential of future arcade conversions could be their saviour.

Edge disagrees about *Out Run* – this was no *After Burner* (great graphics, no game) but a racing tour de force with superb handling and lots of subtlety. And it was also programmed by Yu Suzuki, who went on to design *Virtua Racing*.



Bryan Morton can't see how console conversions of coin-ops like *Ridge Racer* can deliver faithful graphics and sound

In response to your response to Paul Biggs' response to my letter [**Edge** 12], your answers are woefully inadequate. Firstly, how can you use the argument that Acorn has a small userbase when the Sony PlayStation and Saturn, etc all have a userbase of around zero. Secondly, your coverage of these machines excites people and generates interest. If even a tiny amount of this coverage was dedicated to the Acorn machines then interest would grow, thus increasing the userbase and creating more coverage, etc.



***Motor Toon GP*: too 'Japanese' for a worldwide audience? (See letter from James Hinchcliffe)**

The real point of my letter is to ask whether it is intentional that software companies give unreleased games controversial working titles. Two games spring to mind: *Apeshit* for the Jaguar and *The Need For Speed* for the 3DO. These names wouldn't be permitted for the finished product, so is the object simply to create interest in a game before anybody knows how it plays, or is it just an accident?

I've got a little plug for you. I went into the Sony Professional Electronics Centre in Cambridge the other day to ask about the PlayStation and was told by the 'expert' staff there: 'All we know about it is what we've read in **Edge**.' So you know more about the machine than people who work for Sony. I'm impressed!

Joe Hind, Cambridge

The difference is that the Saturn and PlayStation are systems that can look forward to outstanding games. Their userbase might be non-existent now (although the Saturn has just been released in Japan) but it's about to explode and no doubt an import market will soon flourish over here. Acorn's technology is superb but it just lacks clout when it comes to attracting games development.

Most games start with a provisional title and then change because marketing usually only comes into play once the game has taken on an identity. Also, legal and/or copyright problems often force developers to change a game's name.

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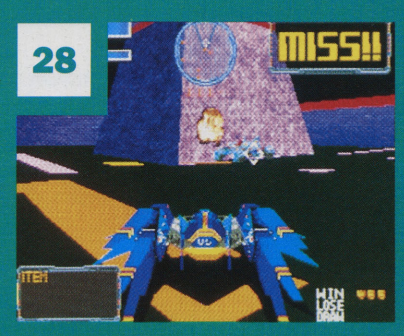
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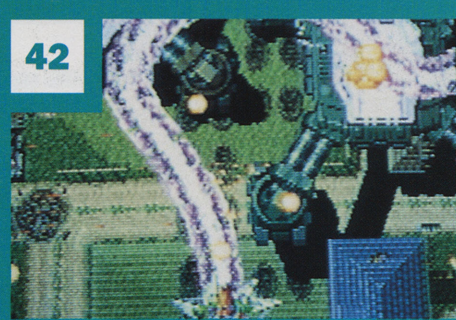
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Prescreen

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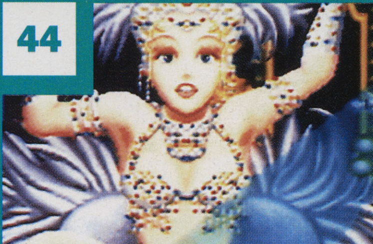
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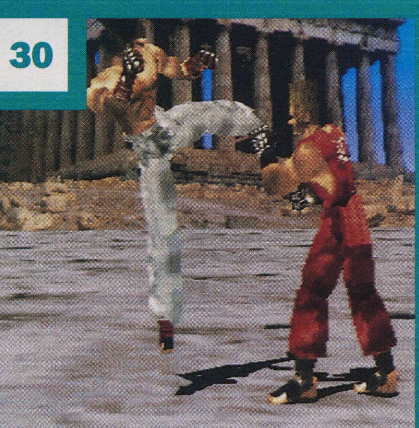


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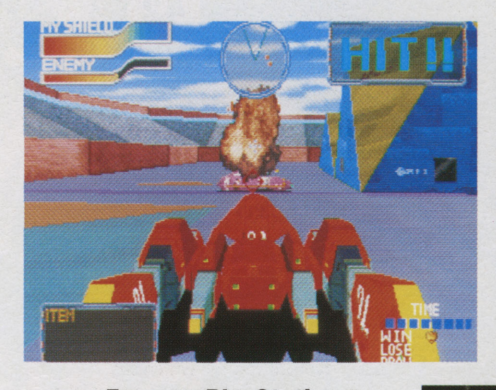


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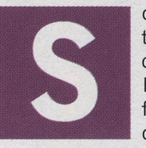


Cybersled

Namco's latterday *Battlezone* moves to the PlayStation, gaining a new twoplayer mode and texture-mapped graphics



Format:	**PlayStation**
Publisher:	**Namco**
Developer:	**In-house**
Release date:	**January 1995**
Origin:	**Japan**



Sony has already reaped the benefit of Namco's commitment to the PlayStation in the form of a conversion of *Ridge Racer* (**Edge** 14 & 15), which will be used to help kickstart the launch of the machine over the next few weeks.

In addition, Namco intends to release a new PlayStation game every month after launch. January's release is set to be a conversion of the superb *Cybersled* coin-op. A *Battlezone* for the '90s, *Cybersled* debuted in the arcades in September 1993 and, like Namco's other PlayStation conversion, *Starblade*, was based on a version of Namco's ageing System 21 'Polygonizer' board.

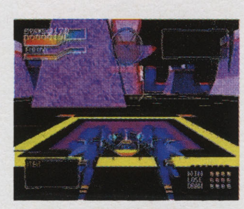
Cybersled is a simple game at heart. Armed with a meaty machine gun and a handful of guided missiles, you choose one of six different tanks, known as 'battlesleds', and enter into a deadly tournament against other tank commanders. Once you're in the arena, it's a question of kill or be killed.

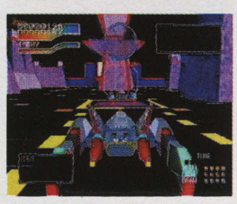
Weapon specifications dictate most of the battle tactics in *Cybersled*. The heavy machine gun is best in close combat: all you have to do is point it at your enemy and let rip. The missiles are much subtler and give the game significant extra depth. You have to get a lock-on before you can launch one, but if the enemy is far enough away he can take evasive action to avoid it, or even take it out with one of his own missiles. Missile stocks are limited, and it takes between two and five hits to destroy a tank.

Crucial to *Cybersled*'s success in the arcades was a link-up feature. This capability will be incorporated into the PlayStation conversion as a splitscreen

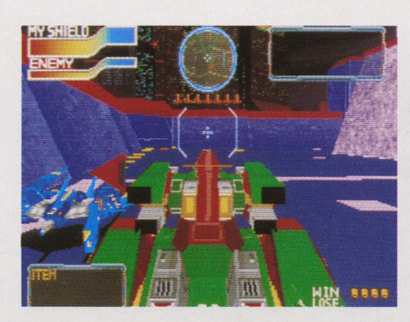


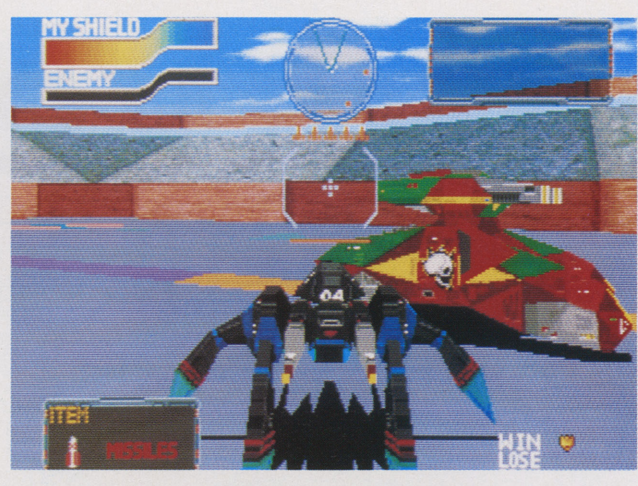
The standard viewpoint places you behind the 'sled (above). A missile hits its mark and finishes off a computer-controlled 'sled (top left)





The texture-mapped tanks and buildings give PlayStation *Cybersled* something that the System 21 original couldn't handle





mode, with smaller onscreen shield, missile and radar gauges. Whether the PlayStation's link-up capacity will also be exploited by the game hasn't yet been announced.

Namco has introduced an additional two views for the oneplayer PlayStation game: one behind and above the battlesled, and another in the cockpit. This is in addition to the traditional behind-the-tank arcade view. However, Namco has still not decided whether to include the coin-op's two-view zoom function in the splitscreen mode – the fear is that it could prove confusing.

But the most noticeable difference between the PlayStation and the arcade game is, of course, the inclusion of texture mapping: both the arena and all the vehicles take advantage of the machine's considerable power and are now resplendent with detail.

The effectiveness of the new splitscreen format is unproven, but as long as it manages to deliver the tense twoplayer action for which the *Cybersled* coin-op was renowned, the PlayStation game looks like being another feather in the caps of both Namco and Sony.

These screenshots (above) are from a 60%-complete version of *Cybersled*. The various gauges may be smaller in the finished game





Each of the six different battlesleds in *Cybersled* has individual ratings for speed, shields and weapons, which affect its performance. It takes between two and five missile hits or a well-aimed burst of gunfire to destroy a 'sled

The coin-op

First appearing in arcades in late '93, *Cybersled* was the last game to use Namco's System 21 'Polygonizer'. This realtime 3D engine first powered Namco's *Winning Run* (a *Virtua Racing*-style F1 game) and was subsequently used in *Driver's Eyes*, *Starblade* and *Solvalou*.

System 21 has a 16bit CPU but, with the help of digital signal processing and a custom graphics engine, it still manages to generate 1,000 flat-shaded polygons every 1/60 second. However, it's technically inferior to the PlayStation hardware, and its geometry engine is only 1/10 as powerful as Namco's more recent System 22 board, used in *Ridge Racer* and *Ace Driver*.

Tekken

Tekken is a perfect illustration of Sony's strategy to push its hardware into the arcade as well as the home

Format:	**Arcade**
Publisher:	**Namco**
Developer:	**In-house**
Release:	**Dec (arcade)** **March (PlayStation)**
Origin:	**Japan**

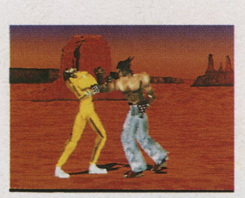
The first game to be developed for the PlayStation-based System 11 board jointly created by Sony and Namco is *Tekken*, which debuted recently at the JAMMA show and was also shown behind closed doors at the US AMOA event (under the name *Rave War*). The game will eventually be ported to the PlayStation, but it's System 11 that Namco is currently pushing.

On the surface, *Tekken* (the title translates as 'Iron Fist') is a conventional – albeit impressive – *Virtua Fighter* clone. At the moment it lacks special moves, music and sound effects, but Namco is stressing that the game is only 50% complete.

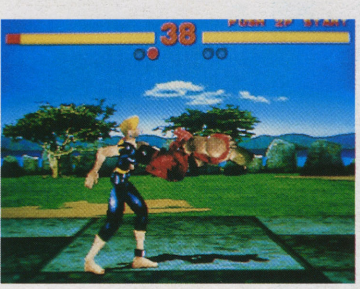
The game's eight characters, whose home turf includes St Mark's Square in Venice, Fiji, the Acropolis in Athens and, curiously, Lake Windermere, are all texture-mapped and Gouraud-shaded, and sport different clothes and logos in same-character match-ups.

Unusually, the controls aren't the standard collection of hard kicks and soft kicks. Instead, there's a single button for each hand and foot. In theory, this makes the fighting more instinctive and special moves easier to learn. Like Takara's PlayStation beat 'em up, *Toshinden*, *Tekken* features a zooming camera which keeps both players onscreen.

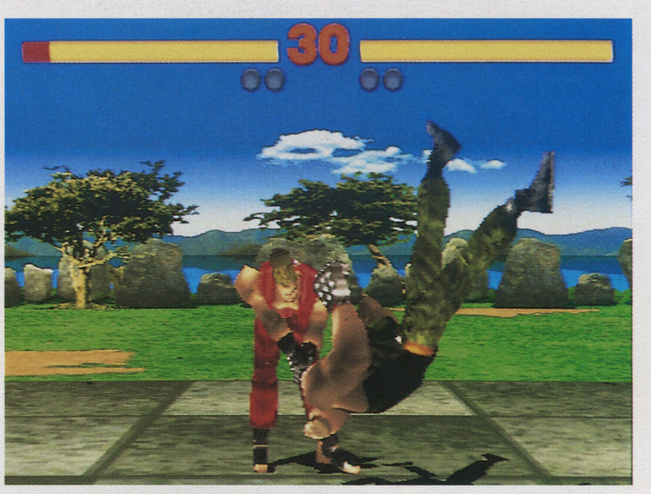
Namco is reluctant to reveal any technical details about *Tekken* but is confident that the System 11 game and the home version will be virtually indistinguishable. E







***Tekken* drew large crowds at the Amusement Machine Show (Edge 15), although *VF2* packs more visual punch**







***Tekken*'s debt to *Virtua Fighter* is obvious (top). The texture-mapped visuals are superb and approach the quality of the graphics in Sega's sequel, *Virtua Fighter 2*. The System 11 arcade version will be released first**

Clockwork Knight

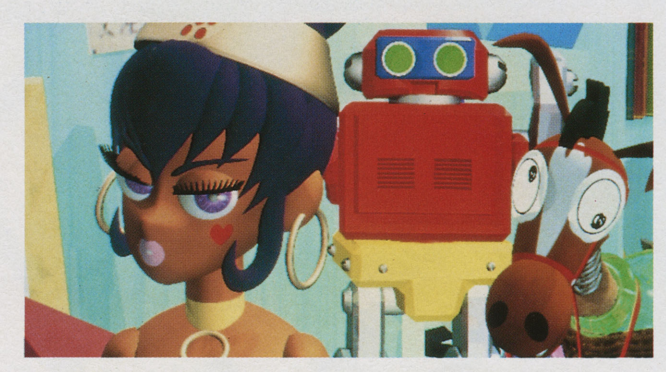
Format:	**Saturn**
Publisher:	**Sega**
Developer:	**In-house**
Release date:	**Dec 9 (Jap)**
Origin:	**Japan**

Sega's platformer for the next generation is stylish and visually innovative, but its gameplay could hold few surprises

A new platform hero will be accompanying the launch of the Saturn in Japan. Sega's unlikely star is a tiny wind-up tin man called Pepperouchau, who features in the Saturn's flagship platformer, *Clockwork Knight*. Sega will be hoping that he proves as popular to the 32bit generation as the irrepressible Sonic was in the 16bit era.

Sega is developing new visual techniques for *Clockwork Knight* to make use of the Saturn's graphics capabilities. One of the most obviously innovative features of the game is its comprehensive use of 3D parallax scrolling. Instead of Pepperouchau marching past flat bitmaps (like in *Sonic*), everything he passes changes perspective according to his position. As he walks towards an object, you see one side of it; as he moves on across the screen, the other side comes into view. This is given added impact by the fact that every object in *Clockwork Knight* is exquisitely designed.

Clockwork Knight's graphics are the result of the Saturn's exemplary

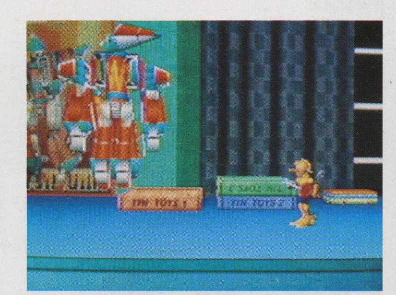


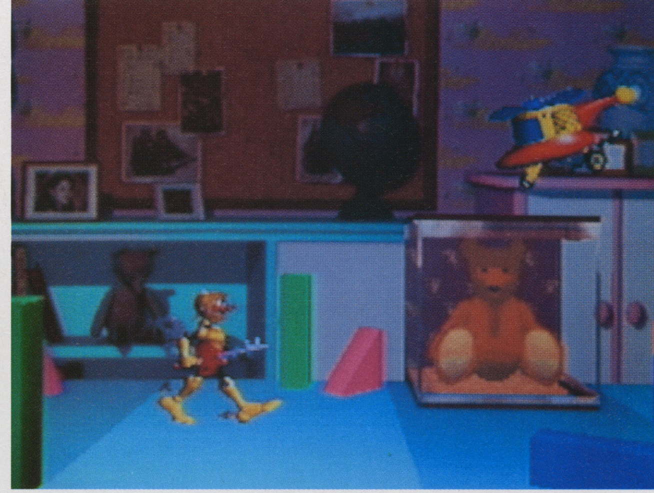
***Clockwork Knight* features amazing attention to detail and some gloriously rendered cut-scenes (above). All this for just ¥4800 (£30)...**



Unlike most platformers, *Clockwork Knight* has pseudo-3D backgrounds which scroll in convincing parallax. You have to jump across this oven flame (above)









By inserting a battery into this train (above) you can cover distances faster. Some of Pepperouchau's friends have turned against him (top)

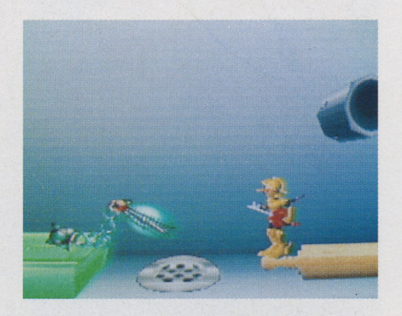
A toy helicopter dive-bombs an exposed Pepperouchau (top). Chelsea, the kidnapped fairy princess (above), used to call the tunes in Toyland

One of the most innovative features of *Clockwork Knight* is its use of 3D parallax scrolling

2D ability – the hardware is essentially a sprite and background shifter. The textured 3D in *Clockwork Knight* isn't constructed out of true polygons, with every pixel assigned a depth co-ordinate. Instead, sprites are used. A 3D effect is created by defining flat geometric shapes onscreen which are tapered to create an impression of perspective. Sprites are then mapped onto them and distort as they scroll by. Because the shapes (such as building blocks with several facets visible, or a wall receding into the distance) are drawn to appear three-dimensional, the sprites mapped onto them also convey depth and solidity.

Pseudo-3D it may be, but the results are undeniably impressive – *Clockwork Knight* is an incredibly good-looking platformer with fantastic parallax scrolling. And the whole shebang moves at a fast 60fps.

To match these impressive 3D visuals, Sega has added some problem-solving elements to *Clockwork Knight*'s gameplay. It has to be said that the puzzles aren't particularly challenging, but working them out still delivers satisfying rewards. For example, on one of the later levels you have to load a battery into a toy train. This done, you can leap aboard for a free ride as it chugs off through Toyland.

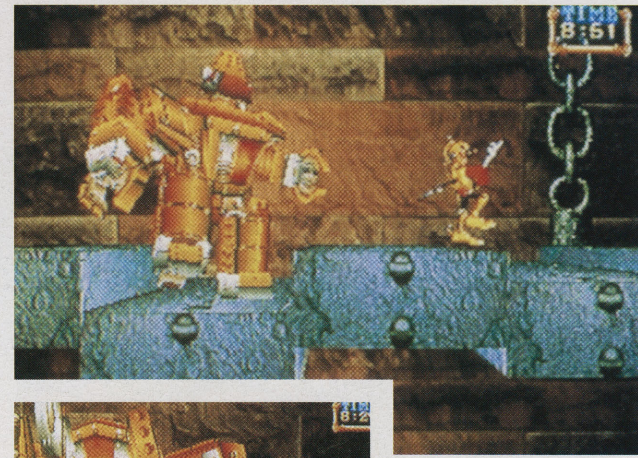


The characters in *Clockwork Knight*, being mere toys, are all dwarfed by everyday household objects

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There are lots of hidden sections to discover in *Clockwork Knight* (above)



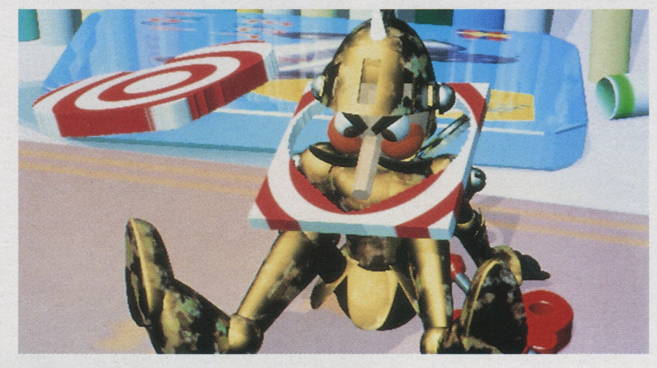
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***Clockwork Knight* is an attempt to marry traditional platform gameplay with 32bit technology**

This proves very useful, as you have to cover a great deal of ground to get anywhere in *Clockwork Knight*. The object of the game is to rescue Pepperouchau's main squeeze, a music-box fairy called Chelsea. As is made clear in the wonderfully imaginative intro sequence and by means of cut-scenes throughout the game, Toyland will be destroyed if you don't rescue her. So Pepperouchau sets off to accomplish just this with the help of a few friends. His task isn't made any easier by the fact that many of Toyland's usually placid inhabitants have turned into rampaging fiends.

Clockwork Knight is an attempt to marry traditional platform gameplay with 32bit technology. The primary attraction is without doubt the beautifully designed characters and 3D backgrounds. However, it's debatable whether the level of challenge in the game will provide a sufficient draw. Then again, *Sonic* wasn't exactly overburdened with depth...

Bosses like this animated robot (above) move convincingly in 3D. Pre-rendered cut-scenes (below) move the story along effectively



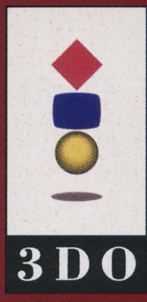


The unusual-looking Pepperouchau, the 'clockwork knight' of the title (seen here in SGI-rendered form), is one of Sega's strongest character designs yet

But *dual-purpose* EA *Lard*™ *is also* **excellent insulation.** *As the nights draw in,* **smear yourself** *with* EA *Lard*™ *to keepout the cold during those* **all-night 3DO sessions.**

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1

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Motorcycle mania on the lawless streets of tomorrow. Race against America's most vicious bikers, speeding through photo-realistic cityscapes at a frame rate unimaginable on anything but 3DO. The intense rock soundtrack features cutting-edge indie rock from Soundgarden, Therapy?, Swervedriver, Monster Magnet, Paw and Hammerbox, and there's nearly 30 minutes of video footage.



ROAD & TRACK® presents

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Get behind the wheel of $6 million worth of super-charged super-cars. Choose from eight of the world's most awesome feats of high-performance engineering, recreated for 3DO and 3-D rendered down to the finest detail. From the gleaming exterior to the upholstered interior, every spark plug and cockpit dial's in place. Race through 65 miles of photo-realistic landscapes, but don't play chicken on these roads – head-on crashes register on the Richter scale.

3

FIFA INTERNATIONAL SOCCER

You've never seen football like this before. Thousands of frames of animation have gone into each player, and there are over 1,000 featured players from 50 international teams! View the action from 7 different TV-style roving cameras, and replay your best moments with NetCam, BallCam and FreeCam. Six of you can battle it out simultaneously accompanied by CD-quality music and chants, and there are dozens of full-screen video clips from classic internationals to enjoy. It's the most realistic soccer sim ever created.

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Starblade α

Starblade cut a dash in the arcades in 1991. Four years on, Namco is aiming for similar success with the PlayStation conversion, *Starblade α*



Format:	**PlayStation**
Publisher:	**Namco**
Developer:	**In-house**
Release date:	**February 1995**
Origin:	**Japan**

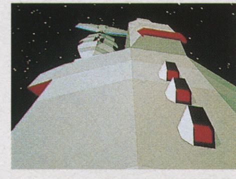
In late 1991 the coin-op taking pride of place in every arcade was Namco's *Starblade*, a shoot 'em up that broke new ground for arcade games with its stylish polygon visuals. To generate these stunning graphics, *Starblade* employed Namco's System 21 board, which was developed for the 1989 race game *Winning Run*, subsequently appeared in the *Xevious* sequel *Solvalou*, and was used more recently in *Cybersled* (page 28).

The *Starblade* coin-op relied on a LaserDisc to store its background graphics, dragging off the pre-rendered polygons as the player moved through the game. Only the enemies, constructed from around 1,000 polygons and displayed at 60fps, were generated in realtime. Texture mapping was absent but later made it into the backgrounds and some of the enemies in *Galaxian³*.

Because of its use of polygons instead of sprites, *Starblade* was a very influential game – apparently, the Nintendo development team which worked with Argonaut on *Starfox* for the SFC used it for inspiration, copying some elements (like the music) uncomfortably closely.

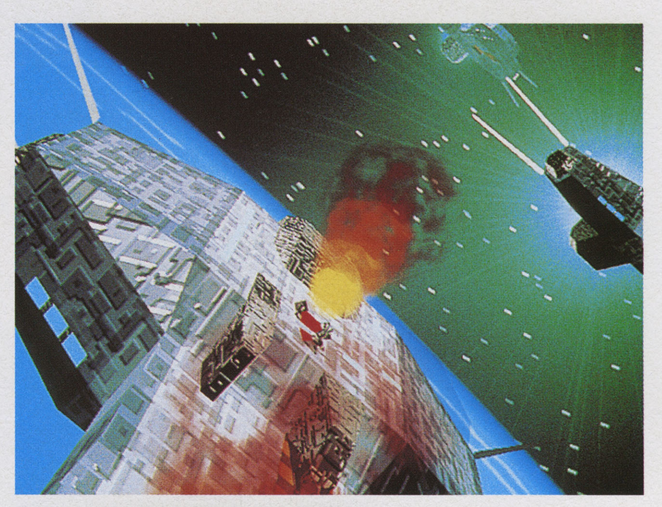
Namco cleverly disguised *Starblade*'s linear gameplay and the player's lack of control over events by using a game screen that was larger than the actual screen. Although your ship flies on rails throughout the game, the fact that the screen scrolls left and right slightly when you move the joystick creates the impression that you've got limited directional control.

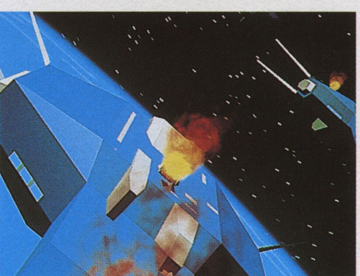
As a result of the restrictive environment, *Starblade*'s gameplay is extremely basic. You control the crosshair gunsight of your ship and have to pick off various targets – fighters, power sources and weapons





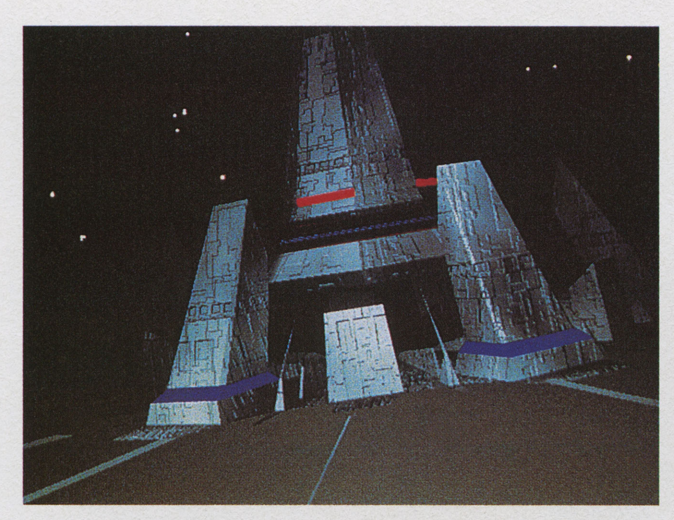
Your Geosword fighter swoops in low over a gigantic alien battle cruiser (above and top)

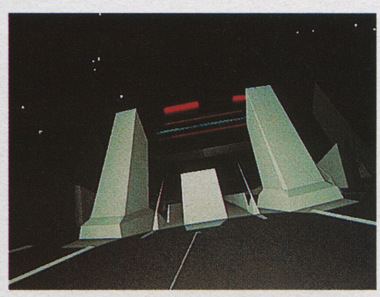




The texture-mapped graphics in *Starblade* α (top) look classier than the original filled polygons (above), and should help to compensate for the game's relative lack of interaction

Although *Starblade* is still only 50% complete, Namco is confident that the game will be arcade perfect





All the background graphics in arcade *Starblade* were read off LaserDisc – only the enemies were generated in realtime. For *Starblade* α, it's likely that Namco will load pre-calculated geometry from the CD for a clearer display

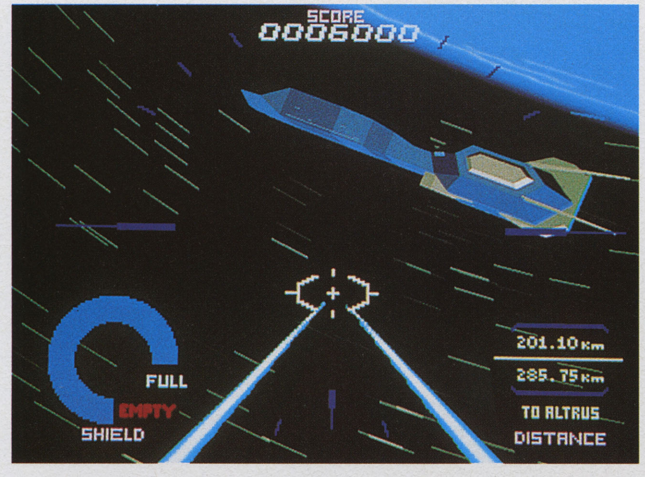
on larger ships – as they queue up in front of you.

Both the story and the structure of *Starblade* owe a great deal to Star Wars. Your home planet has been targeted by the Red Eye, a giant space station armed with a highly destructive wave cannon. As the elite pilot chosen by the Star Fleet Federation to fly the Geosword fighter, you have to attack the enemy fleet guarding the Red Eye, penetrate the space station and destroy its Octopus generator.

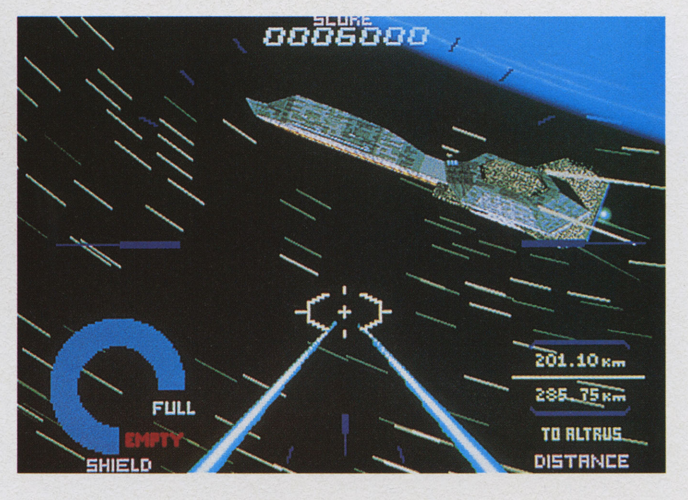
It's likely that Namco will employ the same technique to stream graphics off CD that Game Arts pioneered in the Mega CD blaster *Silpheed*: instead of relying on streamed video (which wouldn't match the coin-op's crisp LaserDisc visuals), *Starblade* will probably load pre-calculated geometry off the CD, resulting in a much clearer picture. However, the inclusion of a texture-mapped mode could cause problems.



Although PlayStation *Starblade* is only 50% complete, Namco is confident that the game will be arcade perfect. Its pedigree gives it a head start, but the gameplay raises a fundamental question: can a linear shoot 'em up designed for quick arcade thrills succeed with the gameplay-hungry and VFM-conscious home gamer? Time will tell, but if any game can manage it, it's *Starblade*. E



All you control in *Starblade* is the gunsight. The crosshair itself is exactly the same in both the PlayStation and arcade versions, but the ships on which it's trained are all gloriously texture mapped (right)



Raiden

Seibu's classic vertically scrolling arcade shoot 'em ups, *Raiden* and *Raiden II*, get the PlayStation treatment

Format:	**PlayStation**
Publisher:	**Seibu**
Developer:	**In-house**
Release date:	**Jan (Japan)**
Origin:	**Japan**



The intensity of *Raiden*'s graphics is unmatched on the arcade shoot 'em up circuit, so the PlayStation has its work cut out



The PlayStation version of *Raiden* is a combination of both original coin-ops. The game handles 800-900 sprites simultaneously

The scrolling shoot 'em up is one of the most rigidly defined genres in videogames. It's therefore not something you expect to see on a new console eager to show its polygon-handling credentials. So it's surprising that one of the first releases for the PlayStation is a conversion of the doyen of the uptight, no-messing vertically scrolling blasters, Seibu's *Raiden*. ('Raiden' is Japanese for thunderbolt, hence the *Mortal Kombat* character of the same name.)

Raiden was released in the arcades in June 1990, at a time when vertically scrolling blasters had already been passé for many years. It's a testament to the sheer playability of the game – and the pull that pure shoot 'em ups still exert – that it was a huge success, both in Japan and overseas. *Raiden II*, which followed at the end of 1993, repeated the simple formula, with the added bonus of new weapons.

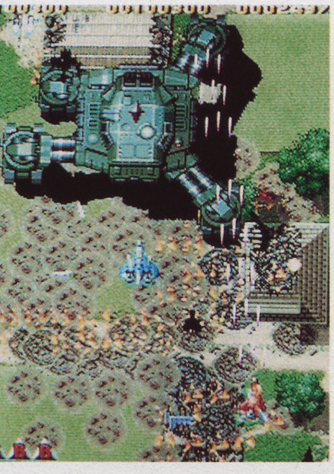
The PlayStation version of *Raiden*, provisionally titled *The Raiden Series*, is now about 70% complete, with three of the eight levels finished. According to **Richard Honneywood**, co-programmer

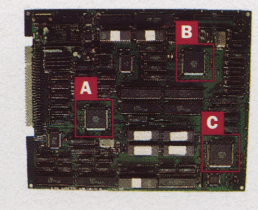
'The side-on mode has the exact coin-op graphics. There's just one point: you have to stand the monitor on its side to get the vertical-scrolling effect'

Tetsuya Kawaguchi, project manager



Like most CD consoles, the PlayStation drags graphics off the disc at intervals. Loading times are fast, though





Chipboard

The *Raiden II* PCB is a dedicated sprite shunter and therefore offers greater sprite handling performance than the PlayStation. Visible on the board are three large chips (see above), each of which takes on a different task. Chip A deals with collision detection; Chip B is responsible for sprite movement; and Chip C calculates vectors.

with Kazutoshi Shoji, the game is an amalgam of both *Raiden* arcade titles.

'At first we tried to make a conversion of *Raiden II*,' admits *gaijin* Honneywood, a recent American graduate of a Japanese programming university. 'It wasn't until a few months later that we decided to include some *Raiden* stages in the conversion.'

This is the first time that Seibu itself has handled a conversion of *Raiden*. 'Some conversions have been done on other formats [Famicom, PC Engine, Mega Drive, FM Towns] by other companies, but we weren't happy with them,' says Honneywood. 'They were okay but were far from the real arcade versions. We wanted a good conversion so we decided to do it ourselves.'

Both *Raiden* coin-ops were played on tall, narrow screens. To reproduce this, the PlayStation game offers two different modes. One scrolls vertically but all the graphics are compressed to fit onscreen. The second mode scrolls sideways but is otherwise a perfect conversion. 'It has the exact coin-op graphics, the exact same size, so it plays exactly the same way,' claims project manager **Tetsuya Kawaguchi**. 'There's just one small point: with the side-on version you have to stand your monitor on its side to get the same vertical-scrolling effect as the coin-op.'

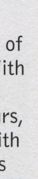
Even though there are radical differences between the custom coin-op arcade board and the PlayStation, the conversion process for *Raiden* has been relatively straightforward.

'The PlayStation is a polygon machine and we don't use many polygons in *Raiden*; we use sprites,' explains Honneywood. 'But in the PlayStation, the sprites and the polygons can be operated in the same way. We succeeded in managing sprites in almost the same way as polygons.' And parallax scrolling? 'It can do it but it's not the best hardware for it.'

Despite *Raiden*'s graphical intensity, Seibu had no problems with CD-ROM access time. 'Sometimes we need more data for the bosses,' admits Honneywood, 'but we're trying to avoid loading delays during the game.'

It helps that *Raiden*'s music isn't competing with the graphics for CD-ROM access. Instead, Seibu is using the PlayStation soundchips (although it ventures that the machine could do with more sound memory).

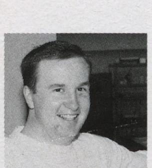
Along with Konami's *Ultimate Parodius*, *Raiden* is the first real test of the PlayStation's bitmap abilities. With *Raiden* offering 800 and 900 sprites onscreen and a palette of 2148 colours, it looks as if the machine will pass with distinction. And that won't do Seibu's reputation with the purists any harm at all.



***Raiden's* most celebrated quality is the huge range of outrageous weapons at your disposal**



You have to turn the monitor on its side to play PlayStation *Raiden*'s arcade mode



'Some conversions were done on other formats but they were far from the real arcade versions. We wanted a good conversion so we decided to do it ourselves'

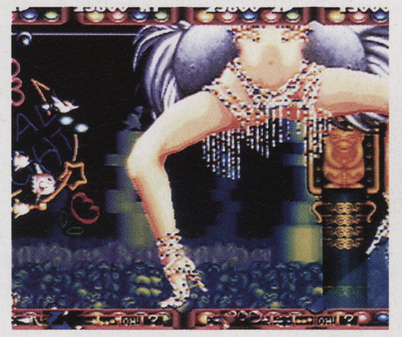
Richard Honneywood, programmer

Ultimate Parodius

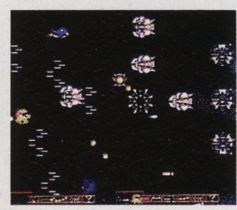
The PlayStation's 3D abilities are beyond dispute. Konami's conversion of its classic blaster will test the machine's 2D talent



Format:	**PlayStation**
Publisher:	**Konami**
Developer:	**In-house**
Release date:	**December**
Origin:	**Japan**

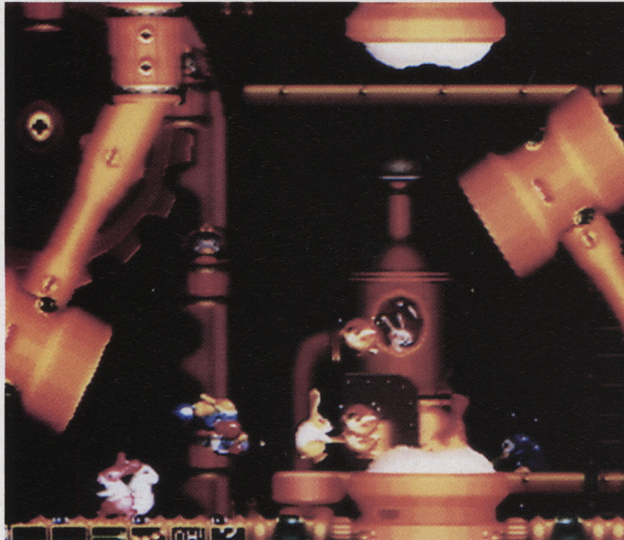


PlayStation *Ultimate Parodius* includes the entire original *Parodius* coin-op...

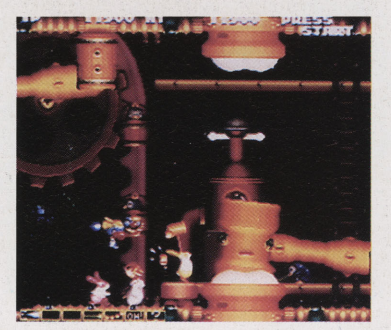




... as well as the new sequel (above). Unlike the SNES games, busy screens like these don't suffer from slowdown on the PlayStation



The parallax graphics in *Ultimate Parodius* are a substantial improvement over those in the first coin-op. These hammers are just some of the obstacles to avoid



Few games illustrate the Japanese obsession with the bizarre better than *Parodius*. Starting life as a coin-op in 1990, Konami's superbly crafted parody of its classic *Nemesis* became one of the best shoot 'em ups on the PC Engine and SFC.

The PlayStation version is based on the more recent coin-op, *Gokujo* (or *Ultimate*) *Parodius*, and is being released shortly after a conversion for the Super Famicom. Unlike the SFC game, though, the PlayStation version is subtitled 'Deluxe Pack' and includes not only an identical conversion of the latest game but also the original *Parodius* in its entirety. Both games are faithful to the arcade versions, from the sumptuous backgrounds to the range of superbly designed sprites.

Most PlayStation games so far have focused on the PlayStations's 3D technology. *Ultimate Parodius* will give it a chance to show off its 2D performance.

THE CREATURES IN DUNGEON MASTER II HAVE DEVELOPED THE MOST DEADLY WEAPON YET



The original Dungeon Master took adventure games into a new dimension. Since then, many copycat games have come and gone. Now Dungeon Master ll is here to set a new standard for dungeon gameplay. As before, the world of Skullkeep is alive with incredible creatures - but now they have learnt to think for themselves and put their experience to use. Now, as well as exploring the dank passages of the dungeon you'll have access to a challenging world above, full of atmospheric effects like lightning and rain. To compete in this incredible environment, you'll find the new interface gives you more control and is even easier to use than before. In Dungeon Master ll, the weapons at your disposal are the most powerful ever. Play it and you'll see why we couldn't send you into this world with anything less.

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You've never seen anything like this before. Donkey Kong Country is the world's first fully-rendered video game. To produce it took 22 years work on 6 SGI work stations and one XL Super Computer. The graphics are 3-D. The playing arena is 32 megabit. The levels number 111. (No, that's not a misprint - one hundred and eleven). But the most amazing aspect of Donkey

For more information about this game, call or write to Nintendo UK Entertainment,

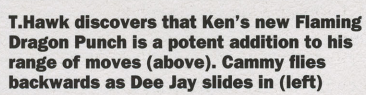
Super Street Fighter II X

Format:	**3DO**
Publisher:	**Panasonic**
Developer:	**Capcom**
Release date:	**Out now (Jap)**
Origin:	**Japan**

Console conversions of Capcom's classic coin-op series are nothing new. But the 3DO game could be the first one that can truthfully claim to be arcade-perfect



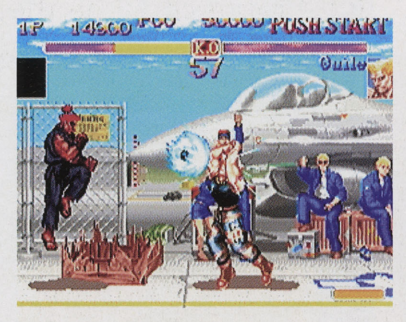



T.Hawk discovers that Ken's new Flaming Dragon Punch is a potent addition to his range of moves (above). Cammy flies backwards as Dee Jay slides in (left)

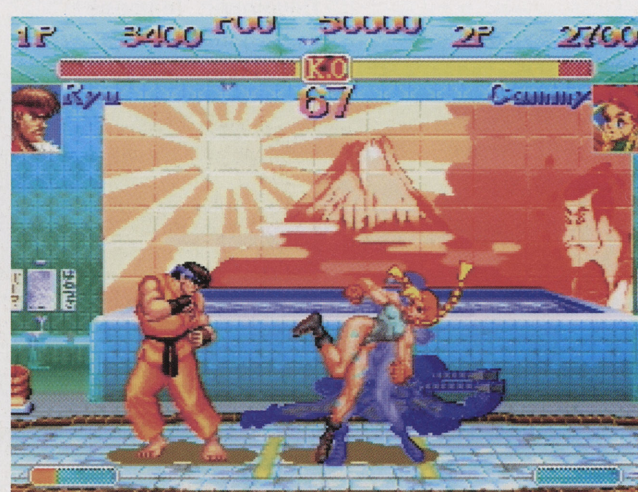
It seems ironic, considering that many 3DO owners probably invested in the machine to escape the seemingly endless string of beat 'em ups on the SNES and Mega Drive, that one of the biggest titles for the 3DO this Christmas will be the latest game in the long-running *Street Fighter II* series, called (in Japan) Super *Street Fighter II X*: *Grand Master Challenge*



The coin-op's magnificent range of backgrounds, characters and moves has been transported wholesale to the 3DO. Every aspect of the game, from the number of colours to the level of detail, looks (to coin a phrase) arcade-perfect



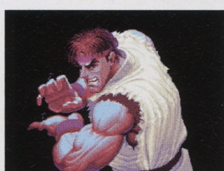
All the coin-op's secrets are included in the 3DO version. Precise timing on the selection screen is needed for Akuma to make his long-awaited console debut











The arcade's stunning intro sequence is perfectly reproduced on the 3DO. Akuma and Ryu prepare for battle

(*Super Street Fighter II Turbo* in the US and UK).

Apparently after heavy pressure from Panasonic, which is itself feeling squeezed by the Saturn and PlayStation, Capcom put its recently formed Personal Computing Division, consisting of some of its most senior and respected programmers, in charge of the project. Its labours appear to have borne fruit, as this looks like the finest *Street Fighter II* arcade conversion yet.

The 3DO game's visual fidelity to the coin-op is extraordinary. The sprites are large, colourful and well proportioned, and seem to have retained all the detail of their coin-op counterparts. The backgrounds are equally impressive: again, the level of detail is impossible to fault, and the movements of the onlookers at each location have been faithfully captured, providing a perfect setting for the foreground action. The game is now fullscreen (on **Edge**'s NTSC machine, at least), and the only noticeable deficiency is the lack of distant parallax scrolling. Q-sound CD music further enriches the atmosphere.

3DO *SSFIIX* is the first console beat 'em up to be a visual match for the Neo-Geo's gorgeous *Samurai Shodown*. But impressive though the graphics are, it's the game's new play mechanics that may prove to be its strongest selling point. With two-, three-, four- and five-hit combos available for all the characters, the emphasis is now on offensive style instead of attack/retreat tactics.

Each fighter now has an extra bar in the bottom left of the screen, which is charged up by performing certain moves. When it reaches maximum, the Super Combo becomes available, enabling the new, more powerful Shadow Combos to be accessed.

It looks likely that 3DO *SSFIIX* will be an almost perfect replica of the coin-op. But whether it will tempt players to buy the machine, given that the Saturn and PlayStation will soon be available in Japan for less than the 3DO's ¥54,800 asking price, is less certain. E



Cammy's Cannon Drill Shadow Combo (top). If a Shadow Combo succeeds, a sunburst (above) replaces the standard background

Victory Goal

Sega's J-League soccer game may not play by the rules, but its graphical flair will certainly win fans

Format:	**Sega Saturn**
Publisher:	**Sega**
Developer:	**In-house**
Release date:	**Dec 2 (Japan)**
Origin:	**Japan**

Fans of the *Sensible Soccer* school of play may find that *Victory Goal* errs on the side of instant appeal rather than longterm challenge

The Japanese enjoy an action-packed game of football even more than their European counterparts. There are therefore never any draws in the Japanese J-League: stalemated matches go to 30 minutes' extra time, and the first team to score emerges trumphant. The winning goal is called the 'v-goal', or 'victory goal'.

Sega's namesake is officially authorised by the J-League and features 12 J-League teams, including such notables as Jef United, S-Pulse and A-S Flügels – Japanese soccer is nothing if not flamboyant.

Using the now obligatory polygon technology, Sega has attempted to make *V-Goal* a TV-style experience. Nine different camera angles plus long- and short-range options mean you can select whatever viewpoint you deem appropriate: zoom in for close tackles in the box; zoom out for long passes up the field. And you can do this without affecting the flow of play.

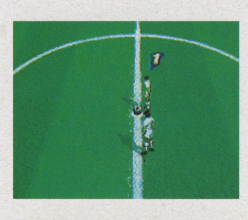
Sega's kickabout will no doubt be another graphical tour de force for the Saturn, but given the Japanese proclivity for arcade action and their unhealthy disregard for anything approaching tactics – or even rules – fans of the *Sensible Soccer* school of play may find that *V-Goal* errs on the side of instant appeal rather than longterm challenge.

V-Goal was one of the first Saturn games unveiled to the press and is now nearing completion. But, ominously, its release has been delayed until a couple of weeks after the Saturn's Japanese debut.





The variety of camera angles and magnifications in *V-Goal* may make for splendid screenshots, but it adds little to playability. The blimp view (top) will probably end up as the standard viewpoint for normal play





***V-Goal*, like *FIFA Soccer*, features a zoom function, so you can observe your players at close range**

In January 1993, Sega announced the development of a 32bit console that would take videogames into a bright new era. For a while, it looked as if the future belonged to Sega. But it wasn't quite as simple as that...



Now the Saturn has arrived. This month the machine reaches Japanese shops at the end of its gruelling journey from conception to hard plastic. Was it all worth it? Edge looks at what Sega has achieved

Sega Saturn

Tech Specs

CPU
2 x SH-2 32bit CPU @ 28MHz

Memory
- VRAM: 12Mbits
- Main RAM: 16Mbits
- Sound RAM: 512K
- Buffer RAM: 512K
- Boot ROM: 512K
- Battery RAM: 32K

Graphics
- Resolution: 352 x 224
- 640 x 224
- Colours: 24bit palette, 32,000 onscreen
- Sprites/polygons: VDP1 chip, dual frame buffer
- Backgrounds: VDP2 chip; 5 planes, 2 rotation planes

Sound
- 16bit 68EC000 processor @ 11.3MHz
- Yamaha FH1 processor
- FM, PCM, 44.1KHz sampling frequency, 32 voices
- DSP 128 steps/44KHz

Data storage
- Double-speed CD-ROM drive
- Cartridge slot

It wasn't supposed to happen. The possibility that its next-gen hardware would face competition simply hadn't figured in Sega's calculations. So when news broke in November 1993 that Sony was developing a videogames system capable of revolutionary performance, all hell broke loose. Those who had seen the machine working claimed that it was far more powerful than anything Sega had planned. Most

Continued next page



threatening was the disclosure that it was to be released in late 1994 – the same time as the Saturn. To Sega's dismay, a powerful new rival had arisen overnight.

Sega's president, the feared Hayao Nakayama, was among the first to be informed. His reaction was typical. He immediately marched down to his consumer research and development division and proceeded to ridicule the sum of his team's achievements over the previous year. For Sega to be beaten by Sony in the videogames arena (an area in which Sony had little previous experience) was unforgivable.

The shock the Sony revelation caused to Sega can't be overstated. 'There had been rumours,' recalls one Japanese Sega employee, 'but Sony's announcement took a lot of people by surprise. It wasn't just the technology that worried people; it was the fact that Sony was planning to enter a market that Sega thought it would have completely to itself.'

Sega's kneejerk reaction was to delay its Saturn development programme by a few months to incorporate a new video processor into the system. Not only would this boost its 2D abilities considerably (something that Sony's machine was less proficient at); but it would also provide better texture mapping for 3D graphics.

Unfortunately, this played havoc with the Saturn's carefully worked-out schedule, to the extent that many pundits thought that Sega wouldn't make it to the market in 1994. Some people even expected the company to cancel the Saturn and concentrate its efforts on something more powerful for 1996.

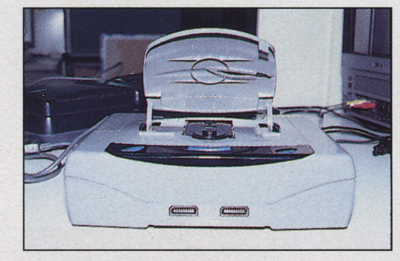
One prominent developer who visited Sega Of Japan's Saturn division told **Edge**: 'There's simply no way that Sega will be releasing the Saturn this year. They're behind on the hardware, behind on the software, and it's very hard to see how they can do it.'

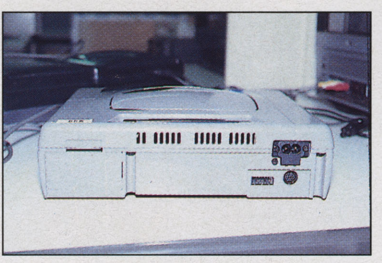
But, contrary to expectations, Sega *has* done it. The reality is that its 32bit machine has now been launched in Japan, and the same system is on its way to the US and UK later next year.

It was originally planned that the Saturn would be released in two forms: a CD-ROM-based machine; and a cartridge-only console, developed under the project name Jupiter. Compatibility between Saturn and Jupiter was to be achieved by means of a plug-in CD-ROM drive containing extra RAM. However, Sega anticipated that it would be problematic trying to sell higher-price, inferior versions of the same games that were available on CD-ROM. The solution was to scrap Jupiter, and this is exactly what happened just a few months later. It was decided at this point that Saturn would be a CD-ROM console (the CD-ROM drive was to be developed by JVC), but with a cartridge slot for expansion or data saving.

At around the same time, Sega made another important decision. It recognised that its most valuable market was the United States, and that it had to retain the enormous userbase it had built up with the Genesis. The answer was the Mars project, which resulted in the system we now know as the 32X.

Essentially, Jupiter became Mars, but whereas there had been a degree of compatibility between the Saturn and the Jupiter, it was decided that Mars would be a completely standalone system. Although the 32X and Saturn contain the same CPUs (but running slower in the 32X) the architecture was never designed to be compatible. And according





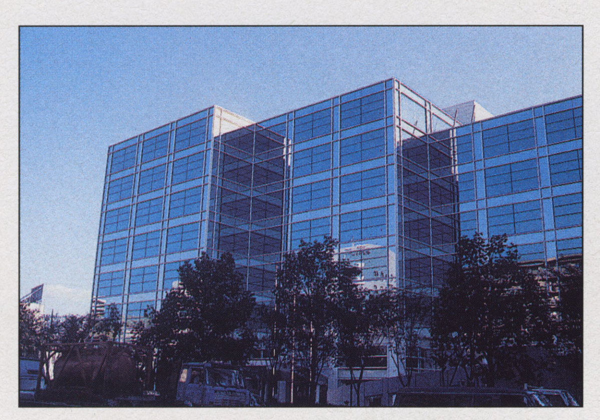
Saturn's rear (above) includes a recess for a lithium battery (far left), a communication link, and RGB/video-out







The Saturn joypads (top) are similar to Mega Drive pads, but with L and R buttons included



Sega's Tokyo consumer HQ in Ohta-ku is where the Saturn was conceived, and where Edge tested the hardware and software

to Sega, it has 'no plans to release an adaptor'.

The launch of Saturn in Japan is Sega's most important hardware release ever. Even though the company is placating its (admittedly minimal) Mega Drive installed base with the 32X (called Super 32X in Japan), which appears on Japanese shelves just a two weeks after the Saturn launch, Saturn is by far the main event. Whether the Japanese will take to the 32X isn't known, but demand for the Saturn is high, even surpassing the momentum that has been building up for the PlayStation launch.

Sega, which has always been sidelined in the Japanese consumer market, is now in a make-or-break situation with the Saturn. The company can't afford a reprise of the set-back it suffered in the early 1990s when the Mega Drive lost out to the SFC, and it admits that the next few months will be tough in the Japanese market.

'Sega is terrified of what Sony is doing,' revealed one Japanese source. 'They brought the machine forward by a week to try and screw Sony, and the fact that *Virtua Fighter* is the only game worth buying for the machine doesn't seem to concern them. In the first week they're counting on the game to shift several hundred thousand units.'

Sega has announced that it plans to ship 500,000 units before Christmas. By this time next year, the company hopes to have sold two million Saturns.

Saturn's marketing budget is rumoured to be huge, and a massive campaign is running on Japanese TV right up to the launch.

'We have to do this because of the PlayStation,' said an anxious PR manager. 'We have to reach a 70% share of the next-generation hardware market. 'If we don't get at least 50% of the market share, we think that thirdparty development will be slow. Thirdparties will not want to develop for a machine that has less than this level of penetration.'

SOJ's PR department has been working overtime during the Saturn launch period. Its efforts to boost Sega's profile within the Japanese gaming fraternity have focused on getting extensive coverage for the development of important titles like *Virtua Fighter* and *Daytona USA*. A myriad of Japanese games magazines have closely followed the Saturn conversion of *Virtua Fighter* since its debut at the Tokyo Toy Show (the version shown there was only two weeks into development) and its designer, AM2 head **Yu Suzuki**, has now attained almost star-like status among Japanese gamesplayers.

'We have to reach a 70% share of the next-generation hardware market. If we don't get at least 50%, thirdparty development will be slow'

Opening the doors to the media in this way has proved to be a shrewd move for Sega. It has given the company new credibility in Japan by showing that it isn't afraid to reveal the more intimate details of its preparations for Saturn. Japanese games companies are traditionally reticent about discussing technical issues with the

Continued next page



Sega is staging a huge marketing campaign for the Saturn launch in Japan (funded by an equally massive budget). As well as heavy TV promotion, ads such as this have appeared in most Japanese games mags

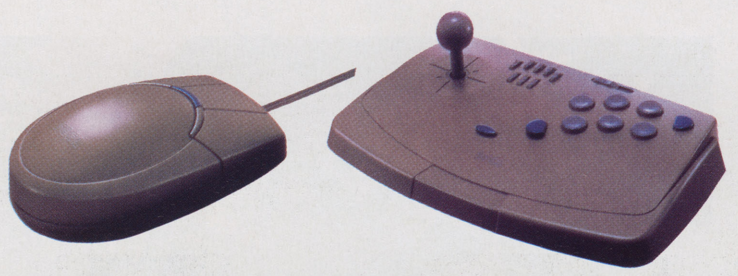


Sega's marketing department needed to take on extra staff earlier this year to kickstart the Saturn hype machine. It seems to have worked



Anyone hoping to spot one of these in Dixons before Christmas needn't bother. The UK Saturn isn't due until late '95

Sega Saturn




Some of the first Saturn accessories include the Shuttle Mouse (left, ¥3,000), joystick (centre, no price yet), and the Multi Terminal 6 (right, ¥3,800), which allows up to seven people to play simultaneously. An SRAM cart is also planned

Continued



press, so Sega's new approach is like a breath of fresh air to people used to fighting the obsessive secrecy of organisations like Nintendo. It's just the latest change in a company that is keen to internationalise itself. Anyone who has visited Sega in Japan will appreciate this – Japanese Sega officials will shake Westerners' hands, whereas a courteous bow will win you more favour at Nintendo.

'Sega makes the world's best coin-ops and is offering a way to bring them into the home. The best thing Sega has is confidence in its brand'

Sega's decision to license the Saturn technology was a strategic coup which bodes well for sales of the machine. In a move aping 3DO's open technology policy, Sega has licensed the Saturn hardware to three main Saturn development partners: Victor (JVC), Hitachi and Yamaha. All three companies have Saturn-compatible machines in the pipeline, with Victor's V-Saturn machine (set to appear some time after the Sega version) apparently packing some new features.

In another 3DO-style ploy, Sega is using Hitachi to handle a large part of Saturn's distribution in Japan. Hitachi will make the Saturn available through its chain of home electrical shops (which means that Sega doesn't have to rely solely on game stores) via a distribution company called Hitachi Mediaforce. This brings the number of retail outlets carrying the machine up to about 7000 and provides Sega with the broad sales platform it needs.

But, of course, Hitachi's link with the Saturn project goes much deeper. In 1993, the Japanese electronics company set up a joint venture with Sega to develop a CPU for the Saturn based on proprietary Hitachi technology. Several Hitachi staff were seconded to Sega's Saturn division (it's now believed that the same team is now working on preliminary 64bit technology for Sega), and the result was the SH-2 – or the 'SuperH RISC Engine', according to the logo emblazoned on the chip.

The SH-2 is a small (2cm square) but fast RISC chip that has been designed primarily to process graphics. Like all RISC processors, it's more streamlined than conventional CISC-based chips and can carry out instructions in far fewer clock cycles.

According to the chief Hitachi technician who perfected the chip, 'The SH-2 has a high calculation efficiency. For magnifying, reducing and rotating 2D and 3D graphics, it's very fast. Apart from workstations, no chip can change coordinates as quickly.'

The question of the Saturn's technical ability is the most controversial aspect of the entire saga. Ever since the machine's Sony-induced revamp, the Saturn has had more than its fair share of teething problems. Only recently were development systems updated to the point where they could be called 'final'.

Originally, the Saturn was supposed to have one main CPU, but it was specced up to include another when tests revealed that a single chip was too slow. And the system control unit, or SCU – one of the main components of the Saturn architecture – has been subject to continual change.

The CPUs aside, the Saturn architecture is processor-intensive. As well as the twin SH-2s, there are five independent processors, including a sprite chip (VDP1), a background chip (VDP2) and – the pièce de resistance – a 16bit custom soundboard designed by Yamaha.

'Saturn's sound hardware is phenomenal,' one developer told **Edge**. 'It's way, way better than the PlayStation's sound – you can basically plug a synthesiser straight in and play it through MIDI.'

Like Sony's PlayStation, the Saturn 'cheats' by using a sprite engine to generate its polygons. Rather than creating true, depth-buffered polygons, the VDP1 maps sprites to geometry,

Continued next page

JVC's V-Saturn is the first licensed machine from Sega's hardware partners. But will Sega's licensing policy pose a threat to 3DO?

Saturn hardware schematic

CD-ROM
CD drive ROM 64K
SH-1 20MHz
RAM 512K
'A' Bus
Cart Expansion
SCU 28MHz
DSP
'B' Bus
16bit Bus 28MHz
'CPU' Bus
Boot ROM 512K
Sub
SH-2
SH-2
Main
RAM 2Mb
SMPC
Controller
Battery RAM 32K
Fr buffer 256K
Fr buffer 256K
VDPI
Texture RAM 512K
VDP2
RAM 512k
SCSP
68EC00 11.3 MHz
RAM 512K
Stereo DAC 16bit 44.1 KHz

The Saturn's architecture is divided into a number of distinct components, represented by the above diagram. A detailed internal layout of the SH2 chips is shown opposite. As well as these twin CPUs, several other important chips are crucial to the Saturn's performance.

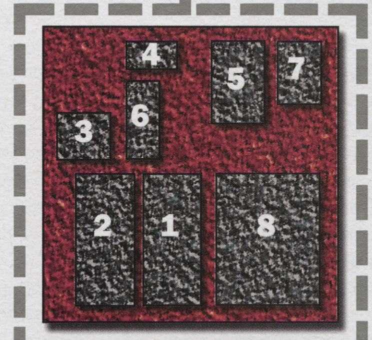
1. VDP1 Sprite processor. Because of the way the machine handles 3D, not only does this chip calculate all of the sprites, but it also maps sprites onto geometry. It relies on a dual frame buffer that handles rotation and pulls data from a 512K texture RAM cache.

2. VDP2 Background processor. This can generate up to five simultaneous backgrounds, and can also rotate two playfields (ala the SNES' Mode 7). It's possible to have three normal scrolls at the same time as a field of rotation.

3. SCSP This is the Saturn's formidable sound processor. Easily the most potent piece of hardware inside the machine, it boasts 32 voices, FM synthesis, PCM synthesis, and two CPU interfaces. It uses a 16bit 68EC000 and a Yamaha FH1 processor for an overall frequency of 22.58MHz. Other features include built-in DMA for file transfer, a 16 channel digital mixer and a 128-step digital signal processor.

4. RAM The Saturn's memory is split between a CD-ROM buffer, the VDP1 & 2 chips, and the SCSP. The total memory, at 4.5Mb, is the highest of any console (bar the Neo-Geo CD).

5. Boot ROM A massive 512K is taken up with the system's ROM. The Saturn allows different languages to be selected and a music CD option even allows the vocals to be removed from CD tracks.





The SH-2 is only 2cm square, but it includes many different facets. This is a breakdown of the Hitachi chip.

1. CPU core The centre of the CPU. Each SH-2 runs at 25 MIPS (2,500,000 instructions/sec) and has other functions besides the normal features of a RISC chip.

3. Bus state controller Interface to connect the CPUs directly to RAM. The SH-2 can exchange data with SRAM and DRAM directly, which reduces wait times.

2. Controller Checks to see if any of the joypad buttons are being pressed.

4. CPU interface The SH-2's 'window' to the rest of the Saturn hardware. Enables the chip to communicate with the other components.

5. Cache address array and controller The SH-2's 4K RAM cache holds data in an address array. The address controller manages the cache.

6. Division Calculates co-ordinates and processes information.

7. Multiplication Calculates co-ordinates and processes information, but in this case is managed by the CPU core.

8. Cache data array 4K of internal RAM to speed up processing.

Sega Saturn

which is much less demanding of processing power. In a game like AM2's *Virtua Fighter*, the characters are actually constructed from hundreds of mapped sprites. (The PlayStation works in a similar way, but has a geometry engine that can process more polygons.)

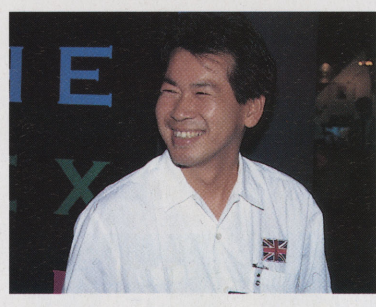
The upshot is that Saturn is an exceptional 2D powerhouse. For arcade-perfect conversions of traditional bitmapped 2D games, it's in a class of its own. It delivers a huge number of scaled and rotated sprites, and can also shift up to five independent backgrounds (with two separate rotation fields also available).

Saturn's 2D power is confirmed by software developers. 'It's a very nice machine,' believes one. 'For conventional 2D arcade games it's awesome.'

The ST-V arcade board (codenamed Titan) has the same basic spec as Saturn but takes games on plug-in ROM cartridges

With 3D graphics stealing the limelight in the arcades, it's odd to discover that Sega's emphasis on 2D performance can be traced back to its arcade division. The success of arcade games like *Virtua Racing* led to a belief within the company that it had amassed more experience of games technology than any other videogames manufacturer. US president Tom Kalinske hinted as much back in mid-1993 when he revealed the existence of the Saturn project.

But the projected overlap between Saturn and Sega's Model 1 technology – as used in *Virtua Fighter* and *Virtua Racing* – proved to be optimistic. As with most Sega technology, Model 1 was basically an expensive assortment of bought-in chips. Its main CPU, an NEC V60 running at just 16MHz, was simply too slow for the Saturn. And the bulk of *Virtua Racing*'s number crunching was handled by four serial DSPs that were way too costly to be included in any home system. Sega's consequent development of the SH-2 meant that it could also produce a Saturn-compatible arcade system.



AM2's Yu Suzuki believes that Sega should follow Sony's approach to attracting thirdwparty developers

The development of the ST-V (Titan) board has provided Sega with a dual-purpose coin-op platform. Firstly, it is intended as a low-cost arcade system, in direct contrast to expensive dedicated units like the Model 2-powered *Virtua Fighter 2*. It offers acceptable 3D performance but is primarily a powerful 2D engine, most suited to handling the latest beat 'em ups and sprite-based action games. Sega hopes that the low price will encourage its widespread use throughout the arcade industry as a multi-purpose arcade system.

But ST-V is also a testing ground for future Saturn games. The system is based on the Saturn chipset, with the main technical differences being the use of silicon instead of CD-ROM as a storage medium (the relationship between the two systems is similar to the one between the cartridge-based Neo-Geo and the Neo-Geo CD) and the capacity for upgraded graphics performance.

Sega currently has ten games in the pipeline for the ST-V, including AM2's *Golden Axe: The Duel*, and *Tantoaru*, a puzzle game from AMI. But enthusiasm for ST-V within Sega isn't high. Says Yu Suzuki: 'I think it will be hard to develop good software for the ST-V. It's not that I think the hardware is bad, but personally, I've got more interest in high-end machines. Because of the low price, though, ST-V will be Sega's new flagship hardware for the coin-op market.'

Flagship or not, ST-V is emerging as the Ford Escort of the coin-op market – affordable, yet unremarkable. It will be interesting to see how it fairs against Sega's Model 2 Ferraris.

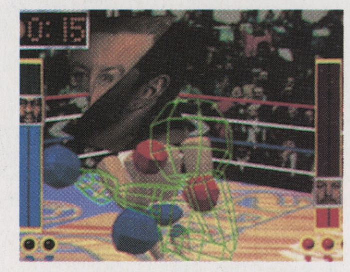


Sega's amusement division has played an important role in the development of the Saturn

Given that Saturn's success hinges on the translation of games like *Virtua Fighter*, AM2 is the lynchpin of Sega's software policy. The work undertaken by Yu Suzuki and his AM2 team over the past six months has been as much a learning curve for them as it will be for other Saturn developers.

'We couldn't port software from the Model 1 hardware to the Saturn,' explains *Virtua Fighter* project leader **Keishi Okayasu**.





Sega's first Saturn-compatible ST-V titles include *Golden Axe: The Duel* (top) and *Title Fight 2* (above)

'The V60 and the SH2 [SuperH] are entirely different chips. The original code needed a lot of work to make it run.'

It seems that the biggest headache for the team has been coping with the twin central processors and maximising the machine's power to display as many polygons as possible. Both SH-2 chips in the Saturn run at 28MHz (whereas in the 32X version they run at 23MHz). Although the combined capacity of both chips is 56 MIPS, they don't run in true parallel. The CPUs have a problem accessing main RAM at the same time – one chip has to wait for the other, and this slows down the overall performance considerably (although the problem can be minimised by using a RAM cache).

'Trying to program two CPUs has its problems,' admits Yu Suzuki. '*Virtua Fighter* uses a different CPU for calculating each character. The two CPUs start at the same time but there's a delay when one has to wait for the other to catch up. One very fast central processor would be preferable. I don't think all programmers have the ability to program two CPUs – most can only get about one-and-a-half times the speed that you get from one SH-2. I think that only one in 100 programmers are good enough to get this kind of speed out of the Saturn.'

Programming in assembly (the chip's own language) is the only way to get fast results. However, the Japanese traditionally use *C*, which leads to a significant drop in performance. In assembly it's possible to achieve a two- to fivefold speed increase over *C*, and some developers hold *C* in such contempt that they maintain that assembly is actually more than 20 times faster.

Sega's in-house development of titles like *Virtua Fighter* has spearheaded the push to get the best results out of the Saturn. 'In AM2 we use *C* for the first few steps and then assembly after that,' says Yu Suzuki. 'We managed to get the twin CPUs running at about 1.8 times the speed of a single chip – that would have been impossible using *C*.'





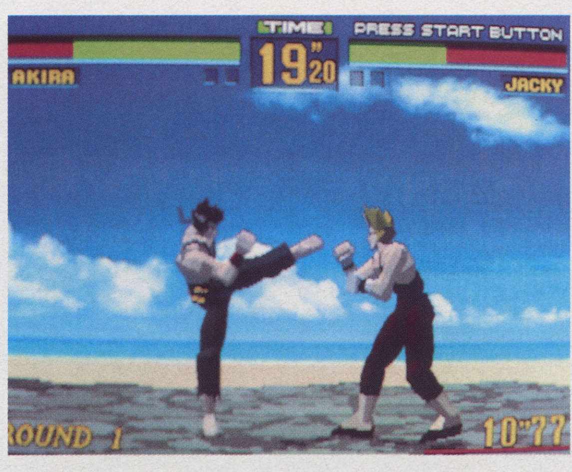
AM2's *Daytona USA* moves surprisingly smoothly, despite being only 20-30% complete

The results, of course, speak for themselves: Saturn *Virtua Fighter* is fast and smooth, and although the polygon count is slightly lower than it is in the arcade, it's a faithful conversion.

And that's good news for Saturn. Sega's arcade pedigree is the machine's greatest asset. The fact that the entire initial batch of Saturns has been pre-booked by Japanese gamers can be directly attributed to the *Virtua Fighter* factor, and if Sega manages to convince more gamers that acquiring a Saturn means buying into an established coin-op hit factory, the machine could do very well indeed.

Ultimately, there are many people who will put loyalty to Sega and confidence in the company's confirmed gameplay expertise before any of the machine's perceived technical limitations.

Shiny Entertainment's **Dave Perry** is one such devotee: 'I am a Sega man at heart,' he says. 'I'm behind Sega all the way. Sega makes the world's best arcade machines and is offering a way to bring them into the home. The best thing Sega has is the confidence in its brand. *Daytona USA* is on the way. I placed my order a month ago…'



The jewel in Sega's crown (in the eyes of Japanese gamers, at least) is AM2's excellent conversion of *Virtua Fighter*

Release Schedule

November 22 1994	
Virtua Fighter (¥8800)	Sega
Mahjong Goku (¥5800)	Shanor
Tama (¥5800)	Time Warner Interactive
Wanchai Connection (¥7800)	Sega
December 1994	
Chinese Detective	Sega
Goal Racer (¥6800)	Sega
Clockwork Knight (¥4800)	Sega
Gotha	Sega
Myst	Sunsoft
February 1995	
Great Wall Of China	Sunsoft
Gamesmaster	Sunsoft
Hissatsu Pachinko Collection	Sunsoft
Cotton 2	Success
Quo Vadis	Gramus
Zero Four Champ Special	Media Ring
1995	
Race Drivin'	Time Warner Interactive
New Legend Of Shinobi	Sega
Pebble Beach Golf Links	Sega
Greatest 9	Sega
Masters (provisional title)	Sega
Deadlus	Sega
Virtua Hang On	Sega
Rampo	Sega
Victory Goal	Sega
Van Battle	Sega
Dynamic Fantasy (provisional title)	Sega
Blue Seed	Sega
Magic Knight Ray Earth	Sega
Basketball Saturn (provisional title)	Sega
Daytona USA	Sega
Gail Racer (provisional title)	Sega
Virtua Tennis (provisional title)	Sega
Ice Hockey (provisional title)	Sega
Panzer Dragoon	Sega
Tomcat Alley Saturn (provisional title)	Sega
Sim City 2000	Sega
Ecco The Dolphin Saturn (provisional title)	Sega
Fantasy Earth (provisional title)	Sega
League Road Saga (provisional title)	Sega
Side Pocket (provisional title)	Sega
Overdrive	Zoom
4D Boxing (provisional title)	Victor
Hardcore	Virgin
The 11th Hour/The 7th Guest	Virgin

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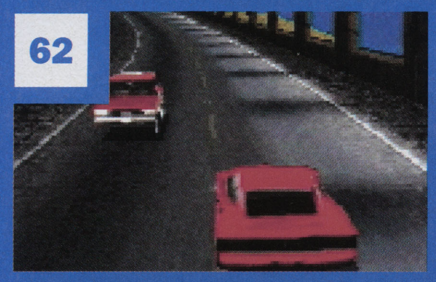
AVAILABLE ON PC CD-ROM FROM INTERPLAY PRODUCTIONS,
71 Milton Park, Abingdon, Oxon OX14 4RR. Tel: 0235 821666



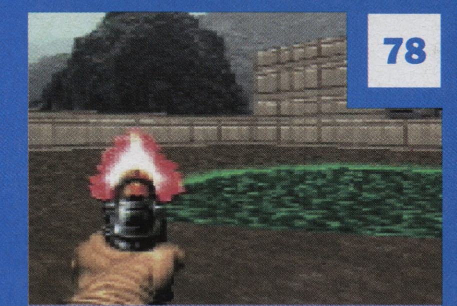
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Testscreen




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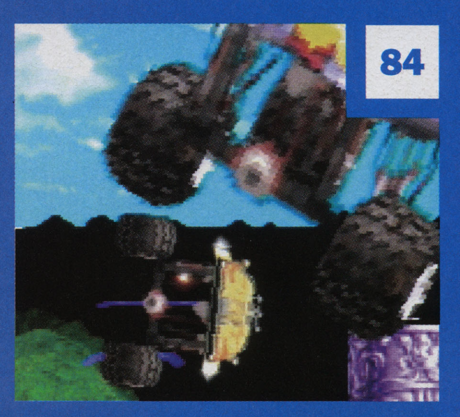

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66



90

The Need For Speed

Format:	3DO
Publisher:	EA
Developer:	Pioneer Prods
Price:	£45
Release:	Dec 2 (UK)

Everyone knows that it's not enough for a game to look nice. Great games depend on a skilful blend of mind-blowing graphics and absorbing gameplay. Some titles try to get by with spectacular visuals only, but they can never disguise their fundamental lack of playability. And, of course, others can't even manage half-decent graphics, let alone enjoyable gameplay.

It's immediately obvious that *The Need For Speed* has got the graphics side of the equation right. Not only is it clearly the best-looking title on the 3DO, but it can also claim to have the richest 3D environment ever seen on a home system. Sure, 3DO *Road Rash* is impressive, but *The Need For Speed* is something else.

Unlike *Road Rash*, which used scaling bitmaps for its 3D backgrounds, most of *The Need For Speed*, including cars, road signs, barriers and even trees, is constructed with polygons. This is especially remarkable when you consider how far into the distance the road is drawn – at times it stretches right to



***The Need For Speed* has better 3D graphics than any other console game. Your Ferrari swerves hard right to avoid a head-on collision in the leafy coastal glades (main). The Porsche brakes but fails to avoid ramming an innocent road-user on the Mountain stage (inset)**









Marvel at the shadows as you cross this bridge (top). Handbrake the Mazda RX-7 (centre left). The Dodge Viper cockpit (centre right). You can take off down this long stretch of mountain road (bottom)

the horizon, wending its way though hills and over bridges to get there. And everything moves reasonably fast, too – the game isn't as nippy as *Road Rash*, perhaps, but it's beautifully smooth and exceptionally detailed. The only real drawback is the fact that you can't leave the road and explore the scenery (because all the track data is streamed off the CD, à la *Crash 'n Burn*).

Crashes are particularly spectacular. Watching your car tumble bonnet over tail down the tarmac is one of the highlights of the game. And the instant-replay camera means you can watch that police car barrel-roll again and again.

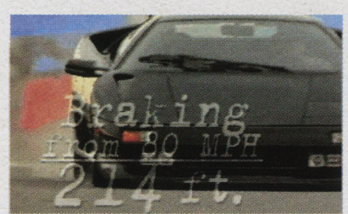
But *The Need For Speed*'s gameplay isn't quite so flawless. The object of the game is to drive faster than your opponent through three courses (each of which is divided into three sections) and try to set the fastest time in the process. A choice

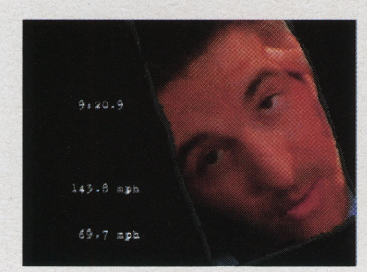
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The useful multi-view instant-replay camera allows you to relive your more spectacular lapses of concentration in glorious slo-mo (clockwise from top left)







FMV sequences show off the the game's splendid selection of four-wheel monsters (top and middle). Your opponent (bottom)

of eight cars is available, including a Lamborghini Diablo, a Ferrari 512TR and a Porsche 911. The handling characteristics of the cars' real-life counterparts have been painstakingly incorporated into the game (and animated accordingly), giving each one a radically different driving feel.

But when the novelty of having 400-odd bhp of raw power under your right thumb has worn off, and you've exhausted your car's capacity for performing handbrake turns, donuts, emergency stops and ramming manoeuvres, you can't help wishing for something more. You seem to spend all your time simply belting down the middle of the road at top speed, listening to the incessant drone of the engine, passing the odd car, and gazing at the incredible scenery. You rarely feel that you're actually taking part in a race, because most of the time your opponent is out of sight.

One problem is that there's no carrot and stick structure in *The Need For Speed* to make it all worthwhile. If you win (which is reasonably easy to do even on the higher levels) your only reward is the chance to listen to your gormless rival insulting you with some dreadful cliché. All of the courses are immediately accessible, too, which means that the main incentive in racing games – seeing the next level – is missing. In contrast, Midway's *Cruis'n USA* coin-op (graphically, an uncannily similar game) works because it adheres to a progressive structure rather like Sega's *Out Run*. In *The Need For Speed*, all you have to do to reach the third section of each course is to make it from one checkpoint to the next without crashing all of your cars.

Ultimately, *The Need For Speed* is more an enjoyable simulation than a fast-paced arcade experience (which is not surprising, since the game's developers, originally known as Distinctive, were responsible for Amiga *Test Drive*). And there's no doubt that car nuts will revel in its accuracy.

However, if you're a gamehead rather than a gearhead, you may miss the play mechanics of a title like *Road Rash*. Let's hope that Pioneer has a better-structured, twoplayer sequel in the works.

Edge rating: **Eight** out of **ten**



Each car in the game handles completely differently. The 911 (above) holds the road well, while the Diablo has a tendency to slide

On the road











From top: the tunnels provide some of the best racing environments in the game; the Viper and NSX show their better side; all these balloons move independently; a steaming pile of Toyota Supra



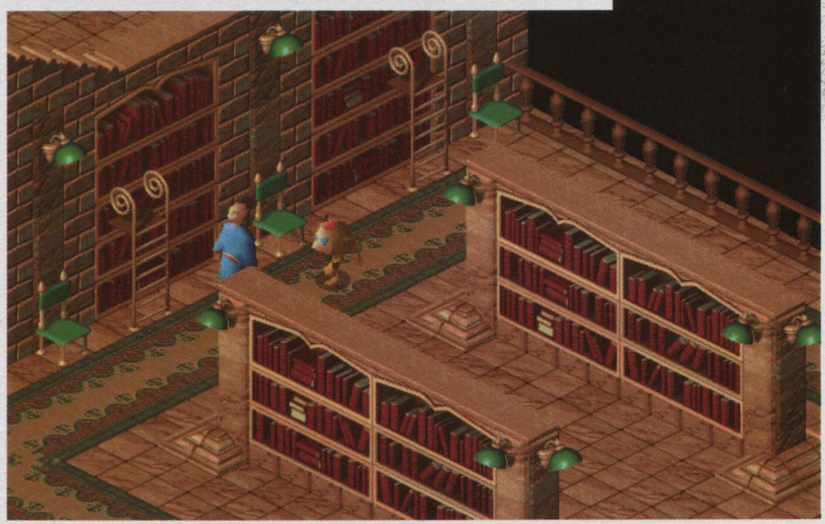
While the majority of *LBA*'s luscious graphics are handled in realtime, there are also lots of superb pre-rendered sequences that help to link sections together. Adeline used SGI kit to create visuals like these

Little Big Adventure



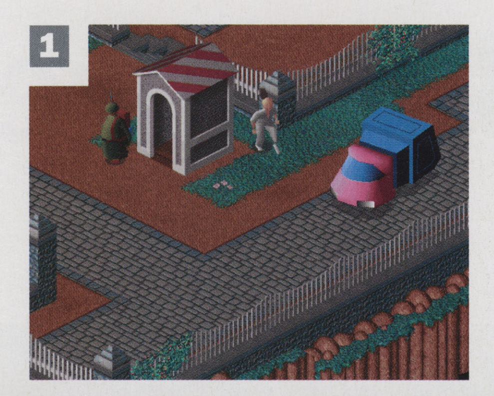
Format:	PC CD-ROM
Publisher:	Electronic Arts
Developer:	Adeline
Price:	£45
Release:	November 18 (UK)

For a game supposedly set in a make-believe world world, with made-up creatures and far-fetched situations, parts of *Little Big Adventure* are disturbingly real. There's a scene at the beginning of the game where you, as the humanoid Twinsen, make your escape from the asylum where you're imprisoned. You kick one of the doctors in the face and, as he reels back, punch him viciously in the abdomen. He collapses to the floor at your feet, clutching his stomach in agony, until you kick him once more in the head and he dies. You've got to



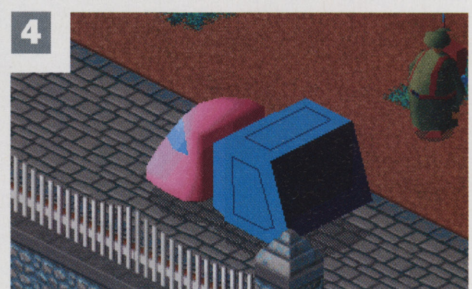
Little Big Adventure* marks a triumphant return to the isometric PC adventure genre, combined with the compelling gameplay of a console game like *Zelda

testscreen







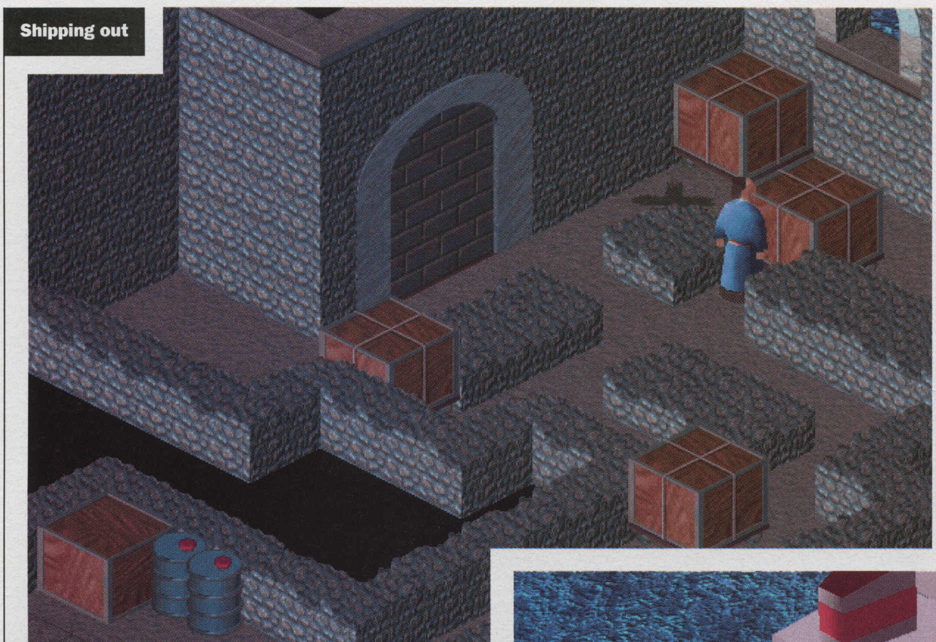


What a **dump**

You make progress in *LBA* through a combination of problem solving and exploration. To escape from the prison where you're incarcerated at the beginning of the game, a little lateral thinking is required. **1.** Sneaking behind a guard house, you notice a rubbish truck going about its business. **2.** Selecting 'discreet' mode, you bury yourself in the mound of refuse and wait. **3.** The truck approaches. **4.** You jump in and it carries you off, giving you time to sit back and watch the realtime light-sourced polygons for a while. **5.** When the truck reaches the tip, you're unceremoniously dumped (with the backing of some outstandingly realistic sound effects) along with the rest of the rubbish. Now you're free, but your quest is just beginning...



Shipping out



Arrange these crates in the warehouse and the elephant in charge gives you a ferry ticket





After a stomach-churning sea journey (top right) you arrive on terra firma (above). When the ship's captain has bid you farewell, you continue the hunt for your missing girlfriend

do it because it's the only way to get the key to the exit, and if you'd let him go he'd have raised the alarm. But it looks gruesome.

And it's all down to the astonishing animation which French developers Adeline (a company which includes many of the programmers of *Alone In The Dark*) have managed to accomplish. By using SVGA Gouraud-shaded polygons rather than pre-stored sprites for the characters, they've produced animation as smooth and true to life as anything previously seen on the PC.

And this achievement is all the more impressive when you look at the detail of each character – not just physical features like eyes, hair and clothing, but the way they move, crouching down, recoiling when hit, shouldering their rifles and peering around suspiciously. In a way, it's a shame when the rather more conventional rendered video footage cuts in.

The animation, then, is state of the art. The scenery, too, is fabulously detailed and 'solid', thanks to the use of *3D Studio*-rendered SVGA backdrops. There's also realtime zooming at the press of a function key – amazingly, the screen scrolls around smoothly in normal VGA to provide close-ups of the action.

The sound is equally outstanding. As you might expect with a 16bit card, *LBA* offers great music, endless sampled speech and a huge array of superb effects. Walking on grass, stone and wood all produce their own distinctive noises, and generally nothing happens in the game without an original and convincing aural accompaniment.

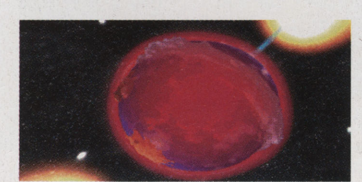
But what's also interesting is the game's setting. We're all familiar with oppressive, totalitarian states where the gun rules and there's steam rising from every grating in the pavement. But *LBA* takes a fresher perspective. The world it's set in actually looks like quite a pleasant place, with parks to walk in, well-tended flower beds, clean beaches and good street lighting. It's only recently that things have gone wrong (the plot tells of an evil doctor who's taken over the world with the help of genetically engineered clones) and soldiers have appeared on the streets. There are sandbags piled up on every street corner, clones peering out from behind barbed wire, and although some citizens glance around

Continued next page









A stylish pre-rendered intro reveals the threat facing Twinsen's home world. *LBA*'s imaginative plot is one of the game's main strengths





Twinsen explores underground for items to help him with his quest (top). The inventory screen shows what objects you're holding (above). Choosing the right mode for the situation is a large part of *LBA*'s challenge (right)

them nervously, most seem unaware of the net that is slowly closing in on them.

Controlling Twinsen seems a little odd at first – you use the cursor keys to rotate him and move him forwards and backwards, rather like driving a car. But it soon becomes natural. He's got four 'gears', too: normal (for walking around and collecting things); athletic (for running and jumping); aggressive (for fighting); and discreet (for sneaking about). The animation is different for each mode.

It quickly becomes apparent that the year and a half Adeline have spent putting *LBA* together hasn't been entirely devoted to making it look nice. One minute you're fighting your way past a group of guards, the next you're sneaking through a secret passageway, shuffling crates around in a 3D sliding block puzzle, or picking your way through a treacherous jumping section. *LBA* combines the best elements of computer games like *Alone In The Dark* and *Flashback* with the intricacies of console adventures like *Zelda* and *Landstalker*.

There are irritations. It seems rather harsh that if you bump into a wall while in athletic mode you lose some energy. And sometimes the screen flip-scrolls to reveal that you've just blundered into the path of a robot.

But you can forgive *LBA* anything. With well over 40 hours of playing time and something new apparently around every corner, it's both huge and absorbing. Rarely does a game arrive that combines technical innovation with diverse gameplay, humour and genuine personality. *Little Big Adventure* is quite unlike anything else.

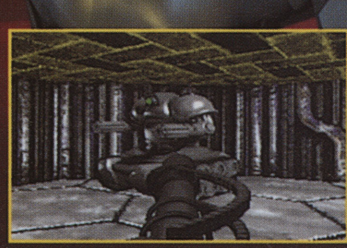
Edge rating: **Nine** out of **ten**

Continued

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Burn:Cycle

Format: CD-i
Publisher: Philips
Developer: TripMedia
Price: £45
Release: Out now (UK)



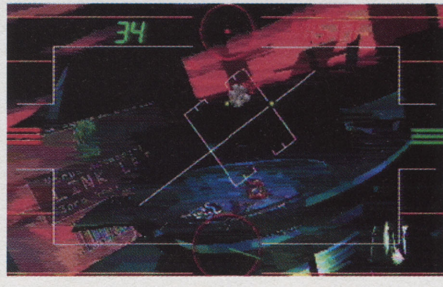
The video in *Burn:Cycle* blends seemlessly with the puzzles. An interrogation at gunpoint provides you with information (above). This Buddha figure (left) explains your next task

Ever since the CD was thrust upon unsuspecting programmers two years ago, debate has raged in the games industry about whether it will prove to be a benefit or a hindrance. One camp accuses the silver disc of being a gameplay killer, while others argue that its huge storage capacity offers limitless potential. Philips' CD-i system has itself borne the brunt of much of the criticism aimed at CD as a games medium, with titles like *The Seventh Guest* held up as proof of CD's limitations.

At first sight, TripMedia's latest project, *Burn:Cycle*, looks like providing further ammunition for CD's (and CD-i's) detractors. On the surface, it's yet another ill-conceived attempt at an 'interactive movie', with sumptuous visuals, orchestral sound, an intricate plot and professional actors but, one suspects, little gameplay.

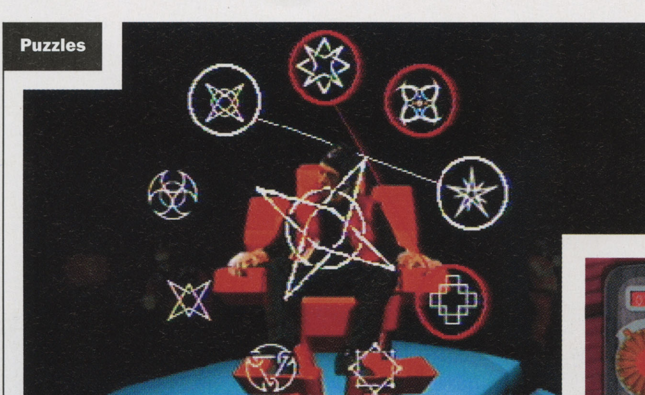
However, as anyone who plays it will discover, *Burn:Cycle* is different. Its immersive gameworld, genuinely dramatic gameplay and extraordinary attention to detail from start to finish make it arguably the first real success in the campaign to bring Hollywood production techniques to videogames.

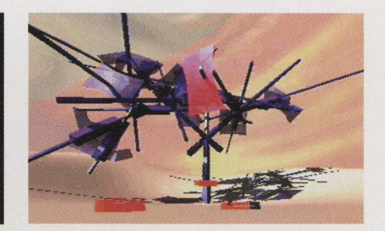
The game casts you as Sol Cutter, a freelance hacker who becomes infected with a military-grade virus (the 'Burn:Cycle' of the title) during an information trawl. You have exactly two hours to neutralise it before it turns your brain to pig fodder. To succeed, you have to overcome the amnesia which is a side effect of the Burn:Cycle and uncover the motive for your attempted assassination. This is a pretty hackneyed plot by any self-respecting cyberpunk's standards, but what keeps you enthralled is the way it's executed.

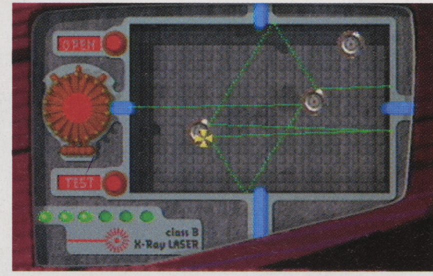


***Burn:Cycle* does contain some arcade gameplay. Here you have to destroy mines launched by the SoftTech Corporation at your airborne car**

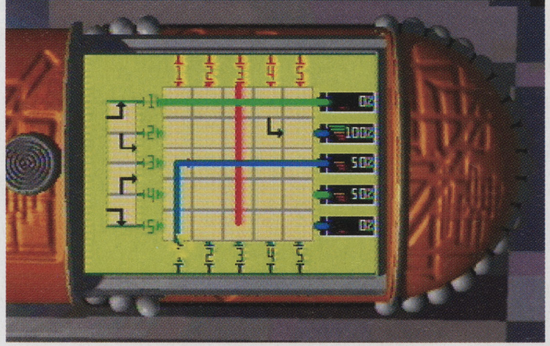
Puzzles









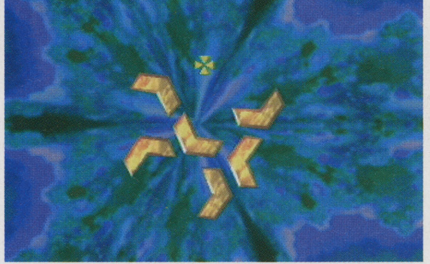


If you win at Psychic Roulette (top) you get a prize. The Lock Breaker (above) is time consuming. The Sound Tree (top right) is one of the hardest puzzles

Puzzles

The puzzles in *Burn:Cycle* range from the challenging to the incredibly obscure. This level of difficulty means that they never become repetitive, even when, like the Psychic Roulette game, you have to play them more than once. The puzzlesolving is made even more intense by the game's time limit.

Consequences of failure include decapitation, detonation of the Burn:Cycle, loss of your arms or just profound frustration.



Most of the puzzles involve working out patterns (above) and reacting to events (lower middle)

Burn:Cycle stands out because of its wonderfully realised environment – each location on the map is beautifully pre-rendered. Although this means that you don't have complete freedom to explore, the epic scale of the scenery ensures that you never feel caged (which is where *Myst* went wrong). Although the picture degrades briefly when you're moving between areas (the resolution sharpens when you reach your destination to reveal all the detail in the scene), the pixelation is somehow completely in keeping with the game's atmosphere.

As well as those sections of the game over which you have control (the vast majority), *Burn:Cycle* offers a vast variety of video clips which advance the plot and enhance the atmosphere but are never allowed to dominate the proceedings. The video footage is complemented by an immense variety of speech and music, running the gamut from foot-tapping club tunes to the surreal twitterings of a gilded Buddha.

Beneath the splendour of its presentation, *Burn:Cycle* is an accomplished blend of puzzles, combat and strategy. The puzzles are all challenging enough to give you a sense of achievement when you've completed them but never so difficult that they thwart you completely. The strict two-hour time limit makes it imperative that you solve them as quickly as possible, which gives the whole game a seriously frantic edge.

The combat sequences are a major part of the game's appeal. Although not nearly as gory as the cut scenes – the main reason why the game carries a '15' certificate – they're reassuringly bloody and extremely satisfying. Occasionally, the cursor moves too slowly across the screen for you to stand a fair chance of making a kill, but this problem is largely confined to the first section of the game and never really threatens your enjoyment.

Burn:Cycle could well prove to be a turning point in the CD-i's fortunes. At last, someone has realised that imagination and flair count for far more than a huge budget, and that's a significant development.

Edge rating: **Seven** out of **ten**

Zeewolf

Format: Amiga
Publisher: Binary Asylum
Developer: In-house
Price: £30
Release: November



The status screen displays your current armaments, as well as a selection of weapons you can buy

There's a real 'stripped down' feel to Binary Asylum's maiden game, *Zeewolf*. The graphics are plain bordering on dowdy, mission screens and information panels are lacking in visual extravagance, and there are only just enough polygons to fully describe the game's mechanical inhabitants. But, just as *Tetris* works perfectly well with the Game Boy's four shades of grey, so *Zeewolf* relies on other factors for its appeal.

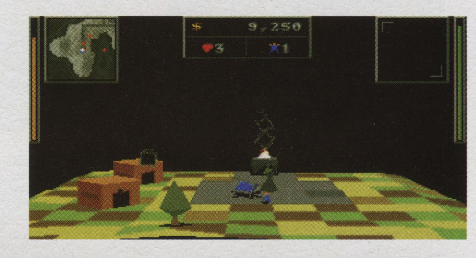
Although an obvious meld of *Desert Strike* and *Virus*, *Zeewolf* is greater than the sum of its parts. Its solid vector graphics are convincing and amply convey its 3D gameworld. And the control method – which for many people was *Virus*'s downfall – is admirably implemented here, making the game equally playable with either joystick or mouse.

Similarly, *Desert Strike*'s mission-based combat has been borrowed wholesale but improved upon and expanded. 32 carefully constructed missions await the novice pilot, with enough surprises and interesting objectives to keep even seasoned veterans coming back for more. The learning curve is perhaps a little shallow – you can breeze through a dozen missions in the first day's play – but the later missions will take some beating. Thankfully, a well-designed password system means that you don't have to play through the whole game in one sitting.

But, most importantly, *Zeewolf* is a joy to play, even without the technical finery and graphical frippery that today's gamers have come to expect. Perhaps the greatest challenge lies in successfully mastering control of the helicopter itself. There's nothing more satisfying than circling an enemy vehicle, avoiding its missiles, and then letting rip with a well-timed barrage of gunfire. Or in performing some complex aerial ballet during a dogfight with enemy aircraft, safe in the knowledge that – unlike in *Virus* – you can't inadvertently flip the Zeewolf and slam it into the ground.

Zeewolf is far from ideal. For example, if you're playing on an A500 you'll often lament the lack of speed. The landscapes aren't as undulating as those in *Virus:* it might have been nice to have a few hills behind which you could hide from enemy radar. And a change from the unvarying autumnal colour scheme would have been welcome. But *Zeewolf* plays a good game and that, after all, is what really counts.

Strategy is an important part of most missions. Guard a strike aircraft (top) or transport a plane to a base with a usable runway (above)







***Zeewolf*'s scenery is very reminiscent of 1980s games (top). Zeewolf hovers above the remains of a tank (middle). Crash and burn (above)**

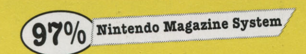
Edge rating: **Eight** out of **ten**

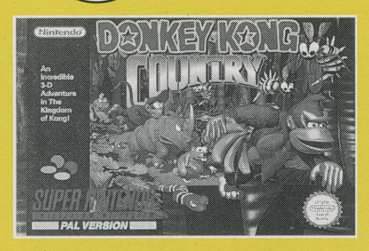












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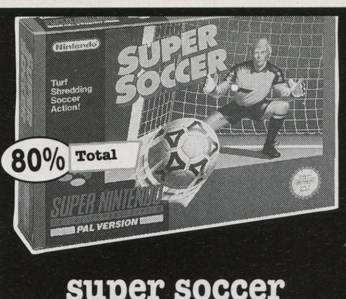
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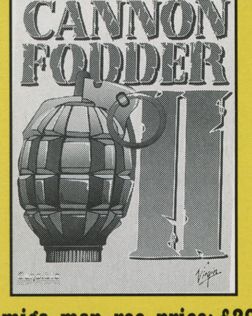
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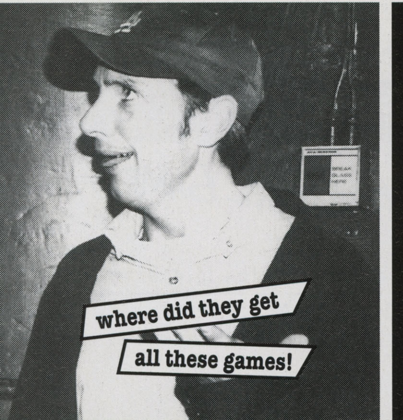
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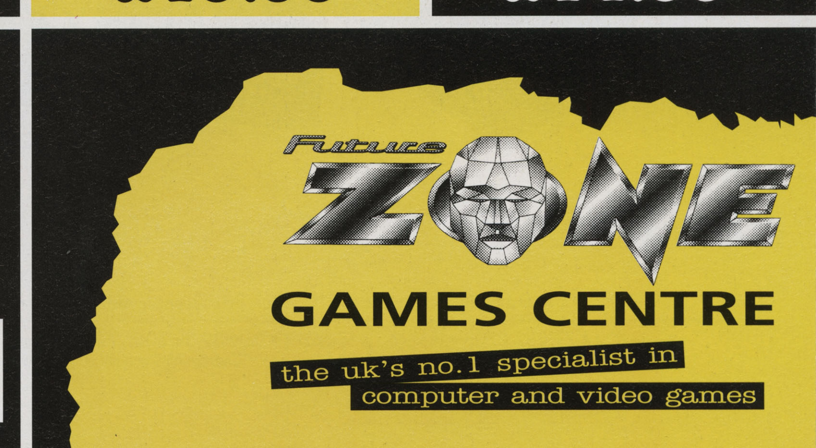
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Final Fantasy III

In its first week onsale in Japan, *Final Fantasy III* sold over two million units. This figure would ordinarily make dollar signs flash up in the eyes of any software salesman in the West. Until you mention the fatal phrase 'roleplaying game'. RPGs, we're told, don't sell outside Japan. You can get away with action-oriented titles like *Secret Of Mana* or *Zelda*, but true roleplayers are regarded as a lost cause.

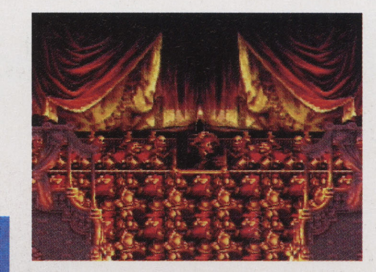
But if any RPG is destined to be an exception to the rule, it's *Final Fantasy III* (which was actually called *Final Fantasy VI* in Japan). This is a game that is indubitably at the pinnacle of its genre. The graphics – a sophisticated combination of digitised images and traditional artwork – are arguably the most detailed ever seen on the SNES. Battles – which take place in realtime – are fast and offer a huge variety of magic, weapons and attacks. And the music is sumptuous (although not quite as good as *Mana's* score).

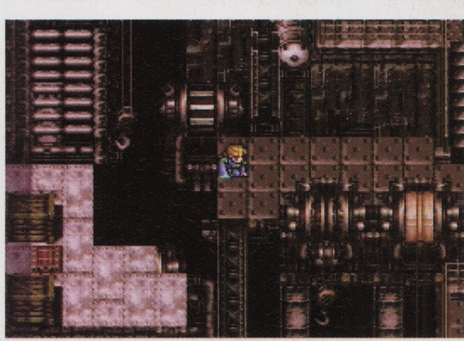
The only real drawback is the structure of the game. Because you're taking part in a story, *FFIII* is essentially linear. Although the random battle sequences add an element of unpredictability to the proceedings, many people will find them irritating compared to the 'fight when you want' gameplay of *Mana* – there's nothing more frustrating than being flung into one scrap after another just when you're trying to explore a new location.

Square has to be applauded for bringing *FFIII* to the West so soon after its Japanese release. Although the translation of the text exhibits a lack of sympathy for the feel and tone of the original game, *FFIII* is a vital game for anyone bitten by the RPG bug. E

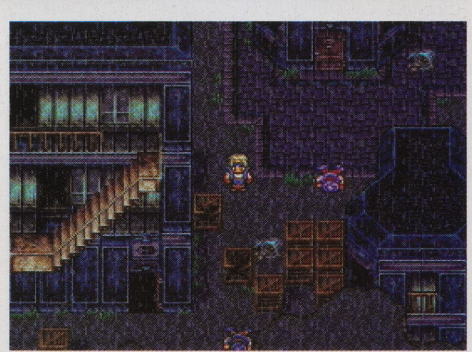
Edge rating: **Eight** out of **ten**

Format:	SNES
Publisher:	Square Soft
Developer:	In-house
Price:	£70 (import)
Release :	Out now (US)









The graphical splendour of *Final Fantasy III* isn't just limited to the backgrounds. Smoke billows from village chimneys and rain pours from the heavens. Mode 7 is reserved for getting around the huge map





Although *FFIII* is a traditional turn-based game, the battles can still get pretty frantic at times

Doom

Format: Jaguar
Publisher: Atari
Developer: id
Price: £60
Release: December (UK)

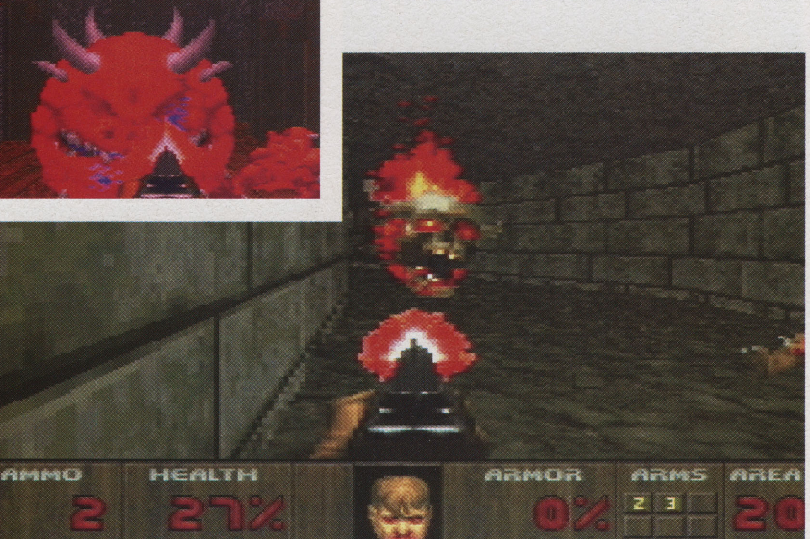


***Doom*'s monsters look just as horrific in the Jaguar game as they do in the PC version – except that now you can see them in all their gory glory on a huge television screen instead of a titchy monitor**

Ever since *Doom* appeared on the PC, console manufacturers have been falling over themselves to get a slice of the action on their own machines. Nintendo has bought the rights to the game for a custom Ultra 64 version coded by Williams; Sega has acquired it for the 32X; and the Saturn is getting *Doom II*.

But first past the post is the Jaguar version, programmed by the original game's creators, id Software. The importance of *Doom* to Atari can't be overstated. If any game is a guaranteed hit, it's this one, and a hit is what Atari desperately needs if it is to have any chance of salvaging the Jaguar. (In fact, id could have finished the game long ago, but it was held back by Atari to give *Wolfenstein* and *Alien Vs Predator* a fighting chance.)

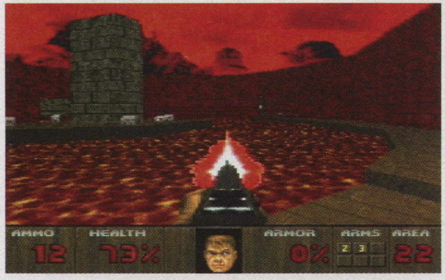
Jaguar *Doom* is actually a hybrid of *Doom* and *Doom II*. The original game's tiered structure has been jettisoned, which means that when you enter a new section you don't lose all the weapons you've accumulated. The level designs have also been revamped to include the greater variety of scenery in *Doom II* – some sections have been altered beyond all recognition. Id has made other changes, too. Six levels have been dumped altogether, while several new, monster-filled locations have been added, all of which are predictably fiendish. Two end-of-level bosses have been removed – the Cyberdaemon and the Spider



Never leave home without your shotgun. The most versatile weapon in the game has a much wider range of gruesome effects than any other – and you never tire of seeing them



Bare knuckles are not recommended for tackling a Baron Of Hell, the monster of monsters in Jaguar *Doom*. Sadly, the biggest baddie in PC *Doom* – the Cyberdaemon – is now absent



Anything that strays into the line of your plasma gun is crisped (top). The hellish red backdrops have been retained (above)

Mastermind – but unfortunately, none of the monsters from *Doom II* have found their way into the game.

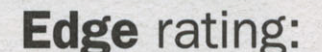
Just as *Doom* pushed the PC's graphical capabilities to their limit, it also demonstrates the power at the Jaguar's command. *Doom* runs at about the same speed on the Jaguar as it does on a 486/50 PC – in other words, fast. Even more impressive is the fact that there's virtually no slowdown, even when you're belting about in the biggest, most complex rooms, firing wildly at hordes of rampaging monsters. (This contrasts favourably with *Alien Vs Predator*, whose frame rate is at best half *Doom*'s.) In fact, in terms of graphics, Jaguar *Doom* is virtually indistinguishable from the PC game.

One of the biggest worries about transferring *Doom* to the Jaguar was the control mechanism. As aficionados of the game will confirm, the best way to play *Doom* is with a mouse and keyboard. Obviously, this isn't possible with a joypad-based system, but id's solution is acceptable, if not perfect. Most of the standard manoeuvres can be executed with ease, although you can't turn around and run away quite as quickly as you'd like.

One of the main advantages of playing *Doom* on a console is that you can view it on the biggest telly you can get your hands on, rather than on a cramped 14" PC monitor. And *Doom* is one of the few games that benefits from the speaker being turned up to full volume. Id has managed to retain all of the original game's glorious sound: blasting an imp with a rocket still produces a wonderful squelch as its insides erupt, and there's nothing more satisfying than the sound of a powered-up chainsaw.

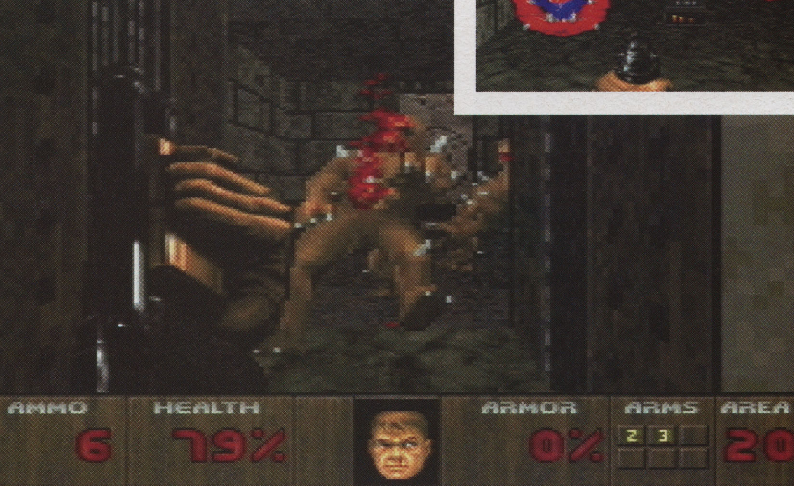
Given *Doom*'s unmatched reputation, it would be a surprise if the Jaguar version wasn't a success. Whether it will attract new adherents to Atari's machine is a matter of conjecture, but given that the game previously needed a grand's worth of PC, it's an impressive endorsement.

Edge rating: **Eight** out of **ten**





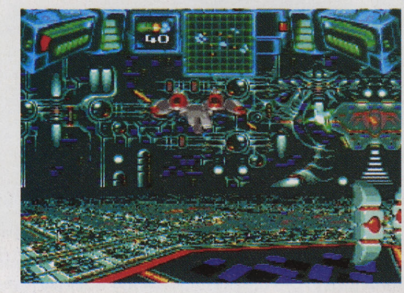


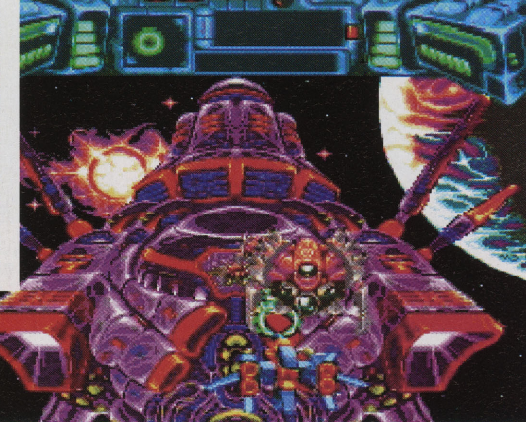


Barrels (top) are great fun when used properly (for killing). Monsters fight among themselves (middle). An impious imp is sent sprawling with a well-aimed blast (main)

Soul Star

Format:	Mega CD
Publisher:	Core
Developer:	In-house
Price:	£40
Release:	Out now



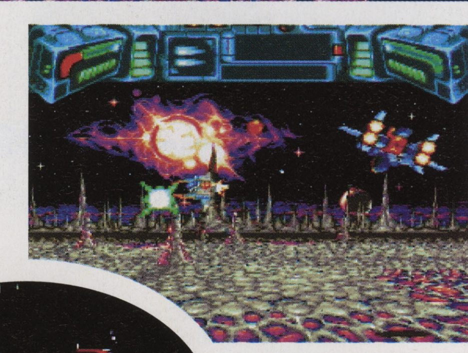


When you meet the bosses (above) your ship shifts shape and the game changes from the standard 'run the gauntlet' shoot 'em up to a more free-ranging, *Thunderhawk*-like affair

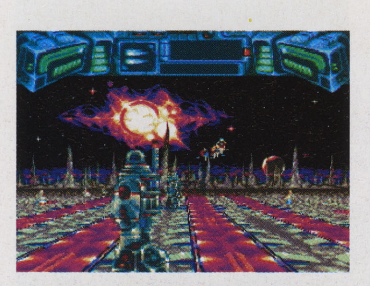
Amidst the deluge of unappetising pap that has been the Mega CD's staple diet since its launch, has been a couple of outstanding titles. The ultrafast 3D 'copter arcade sim *Thunderhawk* was one of the first games to give the add-on credibility. But unfortunately, very little of any real quality followed until the release of the impressive but flawed *Battlecorp*, another 3D effort. Now Core Design, the creator of both those games, has finally released what could be regarded as the third instalment in a 3D trilogy: *Soul Star*.

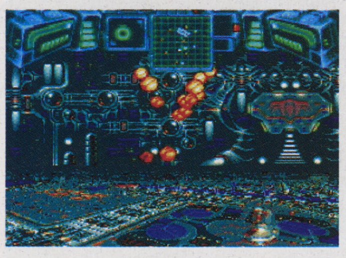
Core claims to have fulfilled its pledge (see **Edge** 3) to push the Mega CD to its limits. Although it's easy to see the link between *Thunderhawk* and *Soul Star*, it's just as obvious that this is an evolutionary leap. The scaling is smoother than in any other Mega CD game and objects have little of the usual alarming tendency towards blockiness.

Compared to the previous two games, though, *Soul Star* is essentially very simple. The ability to roam around the play area has been taken away from you in most of the levels and replaced with more traditional high-octane blasting. The result is a conventional shoot 'em up that isn't going to attract any gasps for inventiveness but, with its slick graphics and fun gameplay, is possibly the best example of the genre you're likely to find on the Mega CD.



Of course, Soul *Star* has the usual CD-streamed animation sequences to spice things up





***Soul Star*'s graphics are a little lurid and look somewhat confusing at times, but they move impressively smoothly, with minimal pixelation**

Edge rating: **Seven** out of **ten**



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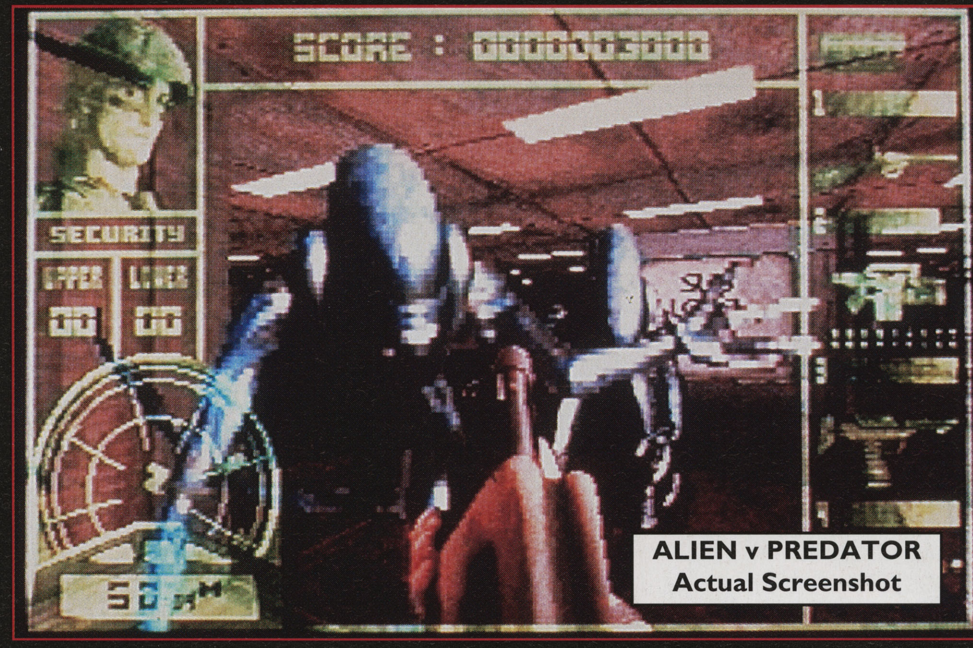
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Off-World Interceptor



The graphics in *Off-World Interceptor* are some of the smoothest seen on the 3DO. The colourful, undulating landscapes are the game's most outstanding feature

Some of the transparent effects are very impressive (inset). The twoplayer mode (above) offers classic 'pick up and play' action

Format:	3DO
Publisher:	Crystal Dynamics
Developer:	In-house
Price:	£50
Release:	December (US)

Racing games come in two main forms. There are those that concentrate on providing straightforward speed thrills – from *Chequered Flag* and *Revs* to *Daytona* and *Ace Driving*. And there's also a proud tradition of kooky console race 'em ups, like *Super Mario Kart* and *Micro Machines*.

Off-World Interceptor is firmly in the latter category. Trading the breathtaking performance of a sleek F1 racing car for an acrobatic 4x4, *OWI* takes you on a boneshaking journey through a series of futuristic landscapes. The game is split into five planets, each consisting of several 'chases', or missions. As you bounce along, avoiding mines and gun turrets, you have to shoot obstacles and cars in front of your while dropping plasma grenades to discourage your rivals from passing you. Collecting bonuses along the way enables you to upgrade your car, and you also receive cash bonuses depending on how fast you finish each chase.

This combination of racing and blasting makes *Off-World Interceptor* a fast and furious experience. The range of pick-ups and the assortment of cars in each race means there's always plenty going on, and the levels are different enough to ensure a decent amount of variety.

With *Crash 'n Burn* and *Total Eclipse* still recognised as the 3DO's greatest visual achievements, it's no surprise that *Off-World Interceptor*'s strong point is its graphics. The land beneath your car is detailed and colourful yet still manages to scroll smoothly. Pixelation is minimal on objects close to you, and there's little noticeable slowdown even when lots of vehicles are battling it out onscreen simultaneously .

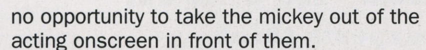
The inter-action sequences are also excellent – providing you have a sense of humour. Crystal Dynamics has dispensed with any idea of taking itself too seriously and set about systematically lampooning the long-winded sci-fi plots that are a feature of so many CD games. All the cinematic cut-scenes feature two silhouetted individuals who waste







***Off-World*'s levels are impressively varied. Race round hills, across the moon or through hair stubble**















no opportunity to take the mickey out of the acting onscreen in front of them.

The sound is acceptable, but it's a long way from stunning. Although the effects are fairly inventive, the 'rock' soundtrack is more muzak than metal.

It's only when you've completed a few courses that the game's flaws become apparent. The main problem is that your car tends to leap and thrash around too much for you to be able to maintain effective control. Although the spectacular aerial stunts you can perform are initially very satisfying, the fact that even the smallest pebbles seem to send you hurtling uncontrollably into the air soon becomes extremely annoying.

And these acrobatics don't serve any obvious purpose. You don't get any points for style, only for the time taken to finish the course. The obvious approach is therefore to simply belt along in a straight line to reach the end. Some kind of extra incentive would have made the game much more enjoyable.

And it doesn't help that the courses are completely unstructured. There's no track, just an open landscape which in which you can roam at will. This is an interesting – and initially appealing – idea, but the novelty soon wears off and you begin to yearn for some kind of boundary. Even a simple slalom or, better still, a texture-mapped *Wildtrax*-style bonus level would have been very welcome.

None of these drawbacks is fatal, but *Off-World Interceptor* does have one serious deficiency: you can't save your games. This is especially frustrating in the oneplayer 'Story' mode, in which you progress through each of the tracks in turn. With a completion time of several hours, it's virtually impossible to finish in a single sitting. There's no question of saying, 'I'll just have another crack at that level that has been holding me up', like you could in *Crash 'n Burn* and *Road Rash*.



Unlike some games, the FMV sequences in *Off-World Interceptor* are deliberately corny

Thankfully, this doesn't affect the excellent twoplayer game. It's always fun to pick up the joypad and have a quick burn with a friend, and even more fun to blast them into oblivion. And because you're racing up the screen, not across it, the view never gets cramped.

Although it's got plenty of good ideas, *Off-World Interceptor* never quite fulfils its potential. It can't boast either the structure of *Crash 'n Burn* or the visuals of *Total Eclipse*. It's entertaining for a while, but the absence of specific goals or a save-game facility limits its longterm potential.

Edge rating: **Seven** out of **ten**

Upgrading

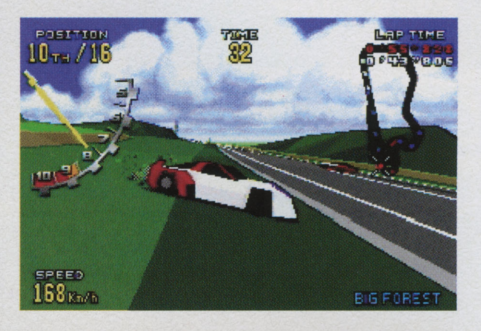
There are six types of cars available in *Off-World Interceptor*, each of which can be upgraded. You do this by collecting cash as you make your way through each level. Shields, engines, gyros, tyres and jump-jets can all be powered up if you have the money.

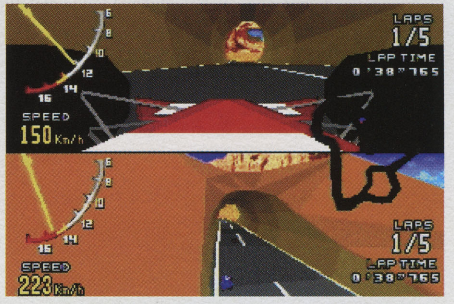
At the end of each scenario you're awarded a large amount of prize money. You can spend this on purchasing another vehicle, using the remainder to upgrade it immediately. Each new car offers greater fire power and increased expansion potential.

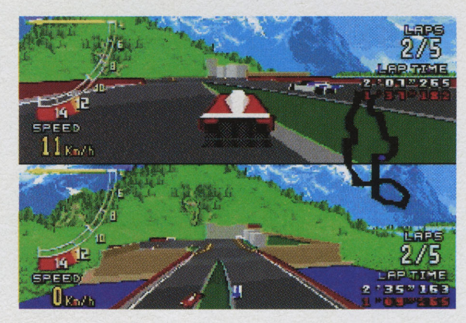
Virtua Racing Deluxe



The circuit may be familiar to experienced players but powersliding the stock car round the corners is a new feature. Note how the 3D polygon trees have developed 2D tendencies







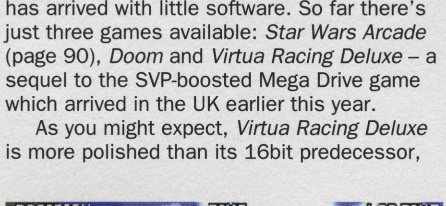
The Sand Park track: two players, two views and two routes (handy for getting past those slow drivers who always seem to get in your way)

Format:	Mega Drive 32X
Publisher:	Sega
Developer:	In-house
Price:	£60
Release:	December (UK)

A few years ago Sega came from almost nowhere to severely dent Nintendo's near monopoly in the 16bit console market. Now the company is aiming to get a foothold in the 32bit sector with its 32X adaptor for the Mega Drive.

However, like most new hardware, the 32X has arrived with little software. So far there's just three games available: *Star Wars Arcade* (page 90), *Doom* and *Virtua Racing Deluxe* – a sequel to the SVP-boosted Mega Drive game which arrived in the UK earlier this year.

As you might expect, *Virtua Racing Deluxe* is more polished than its 16bit predecessor,

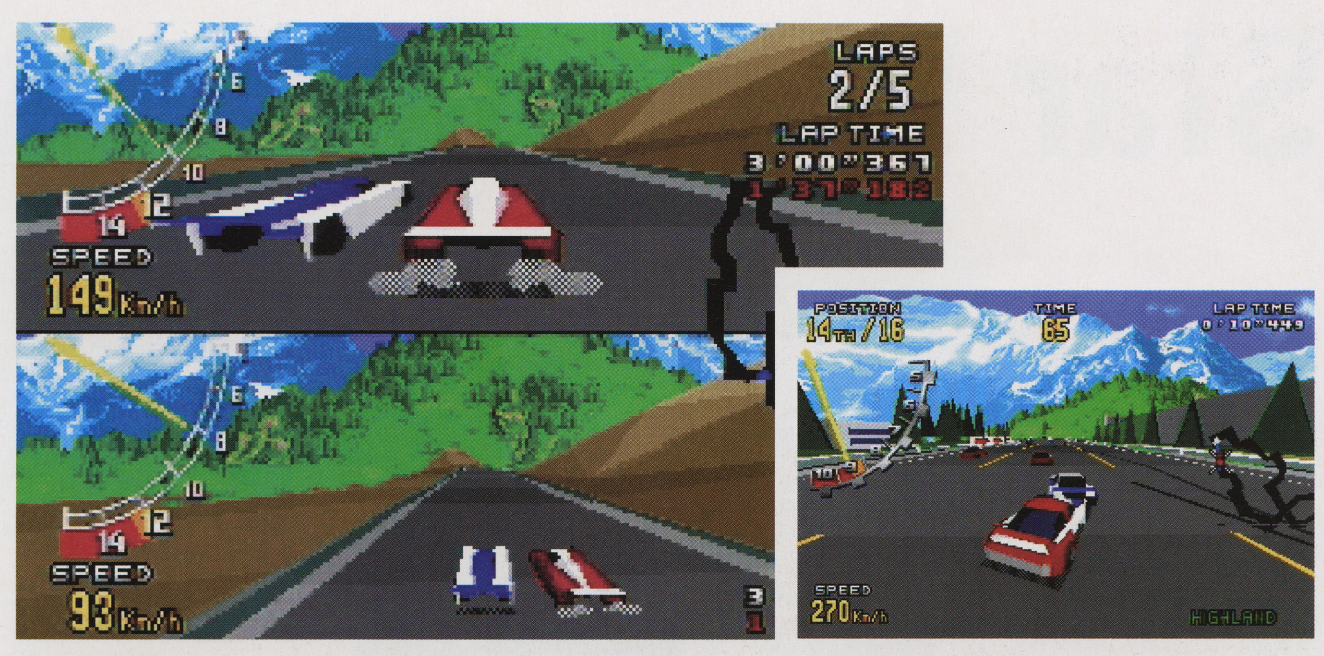




Unlike the original Mega Drive game, ***Virtua Racing Deluxe*** includes an animated pit crew

with a more detailed and realistic polygon gameworld. Instead of a two-tone sky with clouds represented by white blobs, your car hurtles towards gorgeous 256-colour backdrops containing twice the number of polygons as the SVP game and boasting a frame rate of 20fps.

As well as the three original circuits, *Virtua Racing Deluxe* includes two new tracks. The Highland course has you racing through a city, complete with buildings and junctions. But more impressive is the Sand Park track, featuring valleys with sheer rock faces, a



Stock-car drivers (right) are a lot more heavy handed than other racers. They haven't got any scruples about bumping you unceremoniously off the track if it's necessary (and even if it isn't)



The new course-select screen shows just what you can expect from each track. However, it doesn't tell you that you don't stand a chance on the bends of the Sand Park circuit

hairpin tunnel and forks in the road, which allow you to choose alternative routes.

The designers have also slipped in two new cars: a stock-car racer which you can gracefully powerslide through every turn; and a 'prototype' car which is fast and totally uncontrollable at high speeds. Great fun.

Another aspect which the 32X enhances is the sound. The engine note now sounds less like a swarm of bees and more like the authentic high-pitched whine of a beefy, race-tuned engineering masterpiece. It's still not perfect, but now at least it's bearable.

Anyone familiar with *Virtua Racing* in either the coin-op or Mega Drive form will be no stranger to the game's variety of perspectives. In this version the range of views and the basic feel of the game are exactly the same, and the twoplayer splitscreen mode has been left virtually untouched – although it's obviously a lot smoother and faster.

Prospective videogame racing drivers have so much choice these days on so many different formats that something has to be special to stand out. As a demonstration of the machine's technical prowess, *Virtua Racing Deluxe* hardly warrants the 'almost arcade perfect' claims that Sega nonchalantly tossed around when the 32X was first announced. Although the frame rate is commendably smooth and the colours more vivid, the game delivers an uncomfortably similar experience to the original Mega Drive cart. And, at a price of around £230 (including the 32X hardware), it isn't cheap either.

The 32X's debut racer has remained true to the original coin-op in one crucial sense: it's still a delight to play. Whether you're in the midst of a heavy playing session or just spending a quick five minutes hacking around some well-designed racing circuits, the gameplay is fast and compelling and the twoplayer mode is supremely enjoyable.

Virtua Racing Deluxe has clearly got the 32X off to a flying start. However, there are bound to be lots of people who were expecting much more.

Edge rating: Eight out of **ten**

Star Wars Arcade

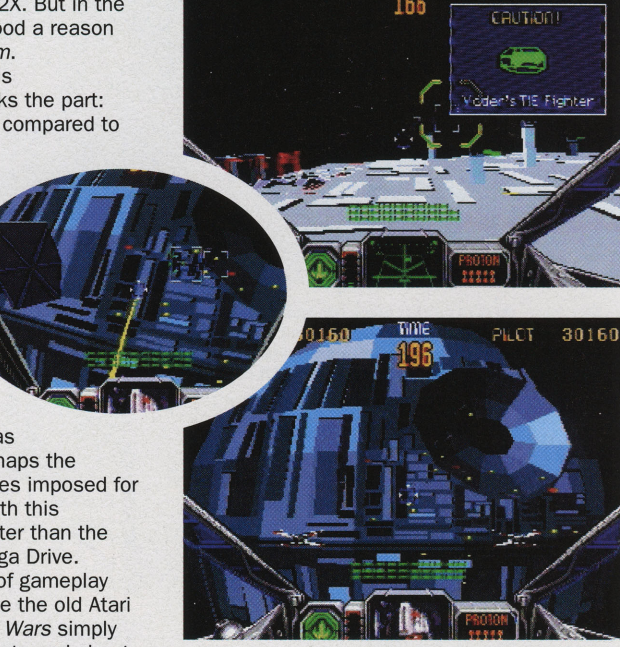
Format:	Mega Drive 32X
Publisher:	Sega
Developer:	In-house
Price:	£60
Release:	December

This game should have been the best reason to buy a Mega 32X. But in the event, it's not half as good a reason as *Virtua Racing Deluxe* or *Doom*.

Basically, *Star Wars Arcade* is disappointing. Admittedly, it looks the part: the graphics, although primitive compared to the Sega coin-op, will no doubt excite power-starved Mega Drive owners.

But although *Star Wars Arcade* does put the 32X's graphical capabilities to good use, it's hardly pushing the envelope. In terms of polygon-generating power, the 32X isn't that far behind the Saturn, but the visuals are a little dull and not as smooth as you might hope. Perhaps the incredibly tight software deadlines imposed for the 32X launch took their toll with this release. Sound, however, is better than the usual din from the standard Mega Drive.

Sadly, the scope and depth of gameplay turn out to be rather limited. Like the old Atari coin-op of the same name, *Star Wars* simply requires you to avoid static objects and shoot moving ones – mostly TIE Fighters. You then have to avoid asteroids before launching an attack on the Death Star – trench and tunnel sequences are both included. There are two difficulty modes: 'Arcade' is easy, bordering on pointless, while the '32X' mode at least offers a decent challenge.



Approaching the Death Star is an overwhelming experience, despite the slightly jerky graphics. Future games should exploit the hardware better

Your X-Wing fighter handles well enough, but since you're flying 'on rails' you tend to concentrate on where your guns are pointing rather than where your ship is heading. This is a little sad, especially in the wake of LucasArts' *TIE Fighter*. Many people may enjoy fast arcade action, but at £50 a pop some depth is called for, surely.

This is an essentially simplistic blaster that only highlights the inadequacies of Sega's *Star Wars* coin-op. Not a great start for the 32X, but it's a faithful enough conversion to satisfy fans of the series.



The trench sequence is faithfully recreated in the 32X game. What isn't explained, though, is why the plots of *Star Wars* and *Return Of The Jedi* have been combined

Edge rating: **Six** out of **ten**

Even in the games world's darkest hours, a select band of trusty titles has kept the light of gameplay burning. **Edge** salutes another veteran videogame

Speedball 1 and 2



Both *Speedball* and its sequel (above) contain some of the most competitive gameplay around

If punches and throws were allowed in football, crowds would double overnight. Sports today lack oomph; injuries and on-pitch fights are far too rare. In 1988, the Bitmap Brothers recognised the namby-pamby state of modern sport and the result was *Speedball*. Three years later the game was revamped and a sequel emerged.

Speedball 2 crosses rugby and indoor footy with a drunken brawl. Two teams face off in a steel-festooned arena, their aim being to slam a chrome sphere through the opposing goal. Forget offsides, fouls and obstructions; fists, boots and dirty tactics are what it's all about.

Witness a game and you're hooked. A tannoy blares to signal the start of the game.



One welcome feature of Amiga *Speedball* was the ability to extend the screen vertically. This permitted a wider view of the arena



***Speedball 2* included more features than the first game, like extra players (top right)**

Centre-forwards clash for possession. A long, curving pass traverses the rectangular pitch and a winger slides to connect. She dodges two attempts to break legs, turns and ricochets the ball off the wall towards the goal. A keeper shuffles into position and prepares to save. He looks shaky but makes the leap. In a flash, chrome strikes flesh, gauntlets fly and the goalie is floored by a left hook. The ball is scooped and rammed home. Score: 10-6. Two minutes remain. The crowd is going wild; the keeper is going off on a stretcher.

The pace is fast. Grabbing coins and pick-ups before your opponents demands skill. Stunners, speed and electricity tip things in your favour. Moolah funds team improvements. Hitting stars and bumpers gives you extra points; spiral ramps enable multipliers. Play against the computer or treat a friend to some blood, sweat and steel. Whatever the choice, you'll come off trembling.

Strategy, violence and brain-bursting tempo put *Speedball 2* top of the league. If this is a glimpse of post-apocalyptic sporting action, you'd better start building a bunker and saving for a season ticket.

Format:	C64, PC, Amiga, ST, Mega Drive, Master System, Game Boy
Publisher:	Renegade
Developer:	Bitmap Bros
Price:	£10-£40
Released:	1988-92





Mark Coleman's superbly crisp 32-colour graphics in the original *Speedball* were a remarkable achievement for the time

This month's Retroview was supplied by **Bruce Summers** from Oldham

The game of the decade

Mortal Kombat 3

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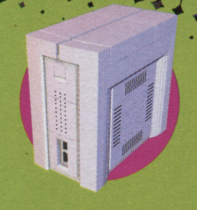
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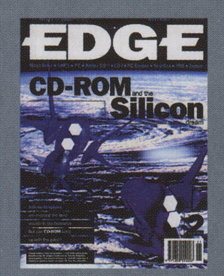

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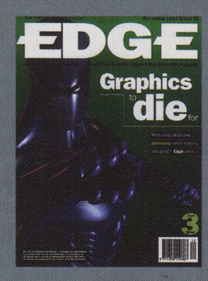

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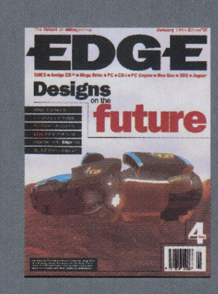

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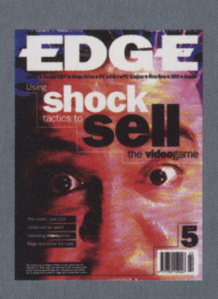
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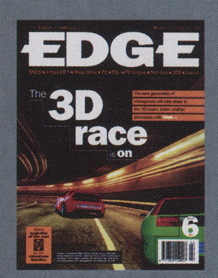
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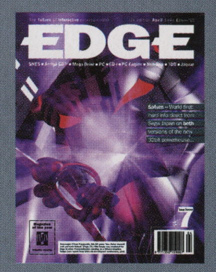










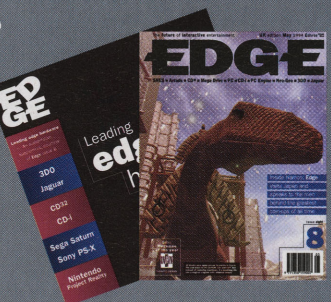


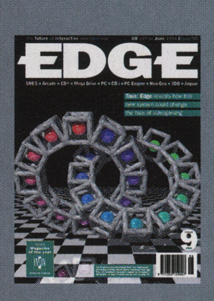


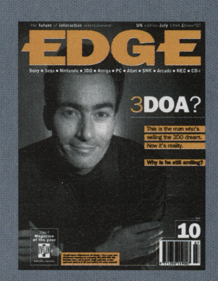
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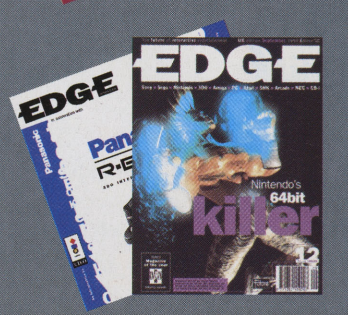
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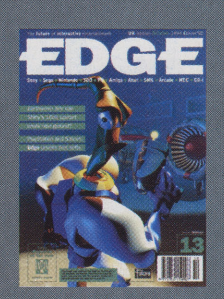
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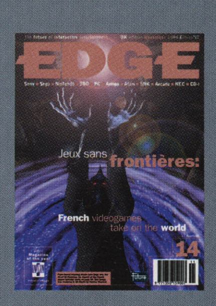
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Edge 15

Neo-Geo CD: Edge gets its hands on the first toploading unit to enter the UK. With Neo-Geo games now priced within the reach of ordinary gamers, does SNK's new machine pose a real threat to the Saturn and PlayStation? • **Making Tracks: Edge** traces the history of videogames music, from the first primitive sound chips to today's sophisticated technology, and questions veteran game musicians on the future of their art • **Revival of the fittest:** old games are becoming hip again. **Edge** asks if developers' increasing interest in videogames' past is entirely healthy • **Prescreen feature:** Namco. **Previews:** *Motor Toon GP (PlayStation); Ace Driver (arcade); Return Fire (3DO); Fight For Life (Jaguar); Toshinden (PlayStation)*

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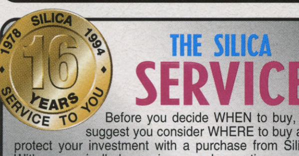
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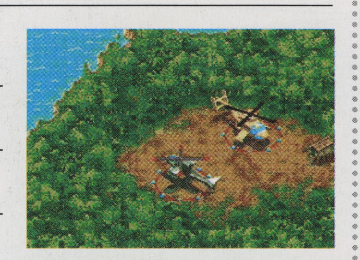


The latest **listings** from around the world of videogames

UK: all formats

UK charts courtesy of Gallup

1 **Urban Strike** ***Electronic Arts (Mega Drive)***
2 Mortal Kombat II *Acclaim (Mega Drive)*
3 Jurassic Park *Ocean (SNES)*
4 Sonic The Hedgehog 2 *Sega (Mega Drive)*
5 Jungle Book *Virgin (SNES)*
6 Cool Spot *EA (Mega Drive)*
7 Stunt Race FX *Nintendo (SNES)*
8 Aladdin *Sega (Mega Drive)*
9 FIFA International Soccer *Electronic Arts (SNES)*
10 Sonic The Hedgehog *Sega (Mega Drive)*



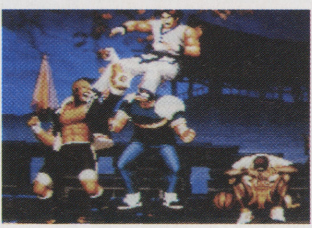


Urban Strike Electronic Arts
FIFA International Soccer Electronic Arts

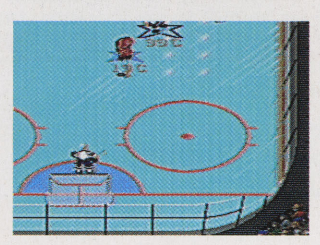
Japan: all formats

1 **Dragon Ball Z 3** ***Bandai (SFC)***
2 The King Of Fighters '94 *SNK (Neo-Geo)*
3 Yu yu Hakusho *Treasure (Mega Drive)*
4 Samurai Shodown *Takara (SFC)*
5 Kirby's Teeshot *Nintendo (SFC)*
6 Human GP3 *Human (SFC)*
7 Mother 2 *Nintendo (SFC)*
8 Xak III *NEC HE (PC Engine)*
9 Demon's Blazon *Capcom (SFC)*
10 Rockman Megaworld *Capcom (Mega Drive)*





Dragon Ball Z 3 Bandai
The King Of Fighters '94 SNK



Mortal Kombat II Acclaim
NHL Hockey '95 Electronic Arts

US: all formats

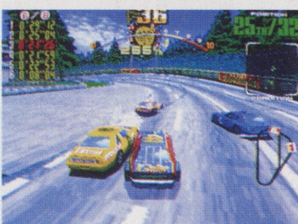
1 **Mortal Kombat II** ***Acclaim (SNES)***
2 Mortal Kombat II *Acclaim (Genesis)*
3 Maximum Carnage *Acclaim (SNES)*
4 Urban Strike *EA (Genesis)*
5 NHL Hockey '95 *EA (Genesis)*
6 Bill Walsh Football '95 *Electronic Arts (Genesis)*
7 Power Rangers *Bandai (Game Boy)*
8 Brain Lord *ENIX (SNES)*
9 Maximum Carnage *Acclaim (Genesis)*
10 Mortal Kombat II *Acclaim (Game Gear)*

Arcade: PCBs

1 **Gunbird** ***Psikyo***
2 V Shoot *Namco*
3 Raiden DX *Seibu*
4 Super X *Mitchell*
5 Fantastic Journey *Konami*



Gunbird Psikyo



Daytona USA Sega

Arcade: dedicated

1 **Daytona USA** ***Sega***
2 Suzuka 8 Hours 2 *Namco*
3 Revolution X *Williams*
4 Virtua Fighter 2 *Sega*
5 Out Runners *Sega*



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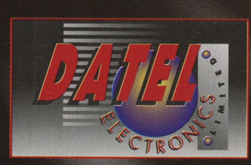
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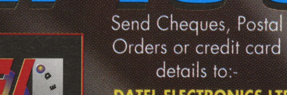
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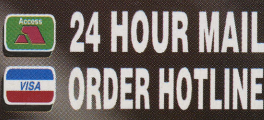


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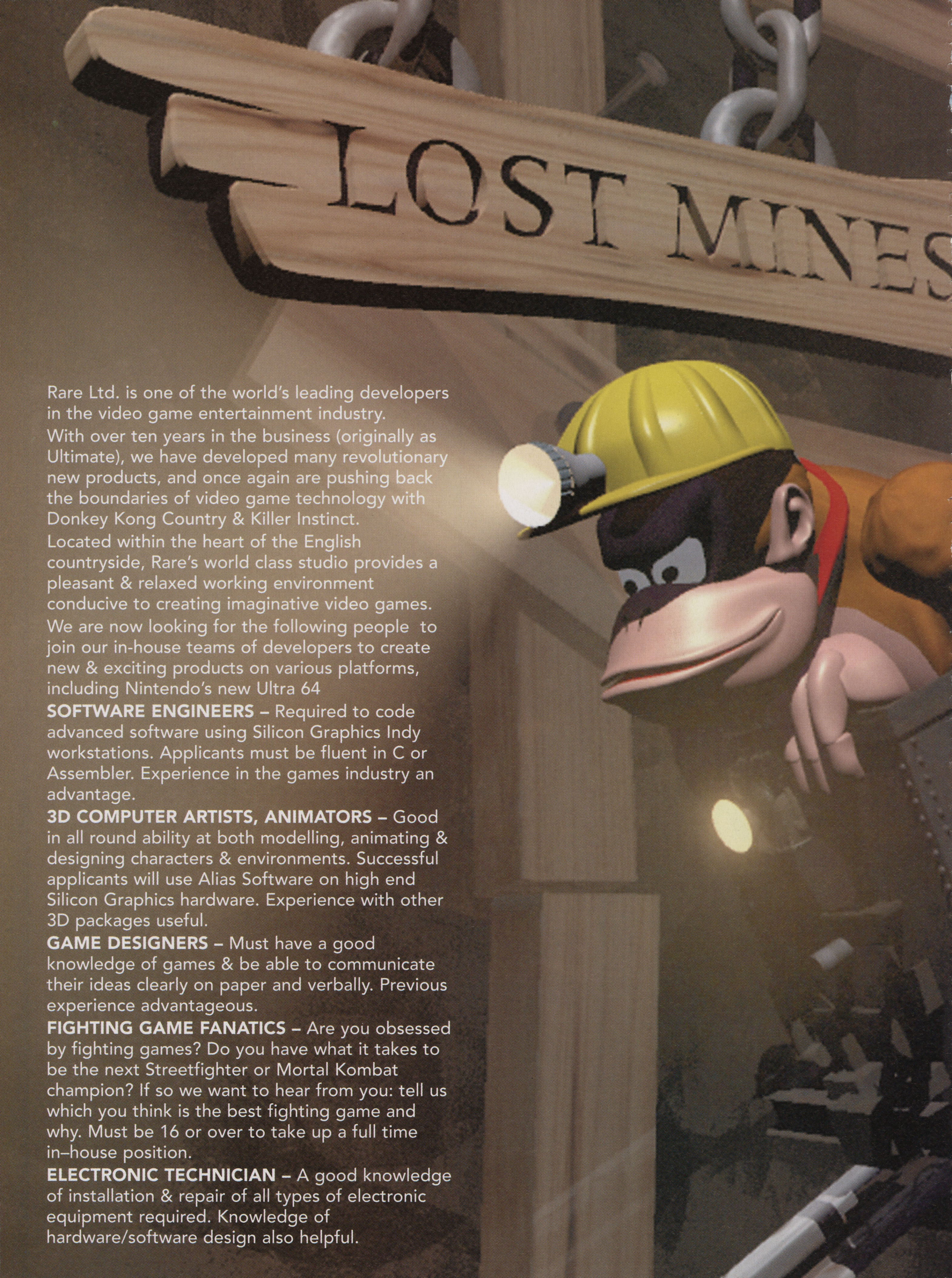
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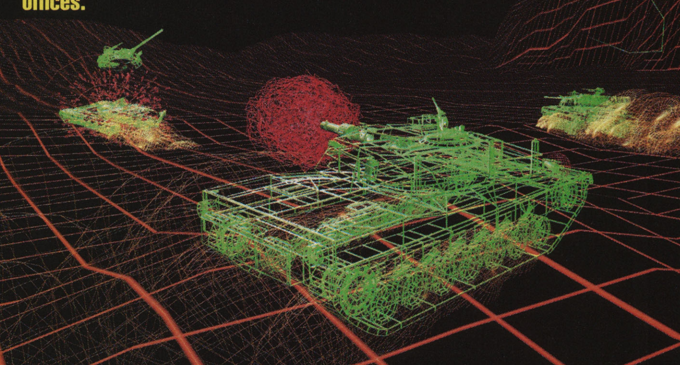
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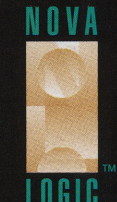
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An audience with...

Sid Meier



On his first visit to the UK, the creator of arguably the most compelling strategy game on the PC shares his secrets with **Edge**

Canadian-born Sid Meier is one of the few people creating games today who has been in the industry since the beginning. He co-founded Microprose in 1982 and has since become a prolific freelance programmer (operating through Microprose) who has gained an unmatched reputation for producing addictive and playable strategy games.

Sid Meier began writing games for the Commodore 64. He then moved on to the Atari ST before making the switch to the PC in 1986. His first PC game was *F15 Strike Eagle*, which was followed in 1990 by *Railroad Tycoon*. But Meier's greatest achievement to date is 1991's *Civilization*, a complex anthropological strategy game whose epic scale and infinite gameplay permutations made it a PC classic. Three years after its release, *Civilization is* still in the charts and has sold almost a million copies. Meier's most recent project is another PC strategy game, *Colonization*, which looks like achieving the same success as its predecessor.

Edge caught up with Sid Meier at Microprose's UK headquarters in the sleepy town of Chipping Sodbury, north of Bristol, just before he was due to fly back to the States.

Edge First things first. How did you get involved in the games industry?

Sid Meier I'd always been interested in games before there were even computers. I played games as a kid – you know, board games, strategy games, card games. I studied programming computers in university. I kind of went into a more traditional field – systems analysis, that kind of stuff. Shortly after that, personal computers came out, and the first one that I saw that was really interesting was the Atari 800. I got an Atari 800 and found the opportunity to combine the two things I liked doing: programming and games. It came along at the right time and was a real opportunity. First I did one or two games because it seemed like a fun thing to do. Shortly after that I met Bill Stealey and he wanted to get into some sort of business in which he could be an entrepreneur. I was interested in the creative and development side and he was interested in sales and marketing. We decided we'd try something and we started a little company to see what happened. We were very lucky to be there at the very beginning of the industry. We put out a couple of products and they sold a couple of hundred and we thought that was really great. We made some more products and we gradually got a little bit bigger and hired one or two of my friends to do a little more programming. That's how Microprose evolved.

Edge You've developed for the Commodore 64, Atari ST and PC, but never the Amiga. Why is that?

Sid The Amiga looked like a fun machine to work on, but technically and in terms of sales the PC was doing it much better than the Amiga, and it kept on getting better. Also, the coolest programming languages were on the PC.

'The Amiga looked like a fun machine, but technically and in terms of sales the PC was doing it much better'

Edge What languages do you use for games?

Sid On the Atari and the Commodore it was assembler and BASIC. On the PC we started right out with C, while still using some assembler for low-level graphics and sound – the high-speed stuff.

Edge Why did you choose trains as the theme for *Railroad Tycoon*? In this country being interested in trains borders on being socially unacceptable – trainspotters are regarded as the archetypal geeks.

Sid Really? I always thought that trains were cool. When I was a kid I had a little train set and liked to play with trains. I just started putting a few pieces of track down and put some trains on them. I thought it was fun and we started adding the game to it with the money and the different cities. It turned out to be a whole lot of fun to play.

Edge Do you do all your own programming, or is the 'Sid Meier' name simply a marketing ploy?

Sid With the exception of the latest game, *Colonization*, which was programmed by Alan Reynolds, all the games that I've been involved with up to now have been programmed by me. We always use special programmers to do the sounds and there might be some animators that we use, but I do the games themselves. I find it easier to actually write them than to try and design

Continued next page



Photographs: **Jude Edginton**

them on some kind of storyboard. So I do a lot of programming.

Edge How long, on average, do your games take to develop?

Sid A minimum of a year but typically about 18 months. First we knock up a prototype in about three weeks. Things will be moving around and you can pretend you are playing it. After that it's a continual process of adding something new, seeing if it works, then saying that now we need to add some of this or some of that. It's an interactive process. And then one day you can just say, 'It's done.'

Edge Your games obviously have fairly complex gameplay. To what extent do you rely on playtesters to make sure you've got it right?

Sid Quite a bit. We try and get as many people as possible to look at the game and respond to it. Especially near the end when the game is pretty much as it will end up. 10 or 15 people playing it and giving a first impression. When you've been looking at it for a year you assume so many things. It's very important that it makes sense the first time you play it. I try and watch the playtesters the first time they play the game.

Edge *Civilization* did pretty well for a strategy game. Were you expecting that?

Sid You never know. Of course, you have an impression of every game and how much you like it. You're never sure that the people who give you feedback are typical or whether they are just telling you what you want to hear. We felt very good about *Civilization* as we were developing it and playing it, but we certainly didn't realise that it would be as successful as it was. It's an ambitious game.

Edge Most players would say that the main attraction of *Civilization* is its addictiveness. How would you define this quality?

Sid What makes a player want to play a game over and over again is the fact that there are many different interesting things to do. You try one thing one time but you might want to try a different thing the next. There are different paths you can go down and different strategies you can try. There should always be paths in a game that you haven't taken.

Edge In *Civilization*, the consequences of your actions are much more obvious than in, say, *Sim City* – you can see the results immediately. Doesn't this make the game less strategic?

Sid I thought it was more interesting. The details were all clear but the interesting part was how you worked everything together. In *Sim City* frustration can arise, as you think one thing is going to happen but it doesn't. In *Civilization* you know what the immediate consequences are but not the long term ones.

Edge How did you set about creating the artificial intelligence in *Civilization*?

Sid It's a process of playing the game and teaching the computer as you go. As you get better the computer also learns.

Edge *Civilization* was often perceived by players as being 'unfair'. Did you program the computer to 'cheat'?

Sid Yes. But the computer cheats in both directions. If you're playing on the easiest level, the computer cheats to handicap itself. On extreme difficulty levels it takes huge short cuts. We're trying to make it challenging so we make a few adjustments.

'Trip is not hurting. Trip still has a fine life. 3DO is still out there but it just hasn't lived up to initial projections'

Edge Unlike *Civilization*, your latest game, *Colonization*, is restricted to a specific location and period in history [it deals with European settlement of the Americas]. Why did you choose to limit the gameplay in this way?

Sid We didn't want to do a rip-off of *Civilization* but we wanted to please all the people who had written to us saying how much they'd liked it. We identified a few key things that made *Civilization* the game it was, the exploration, the military/political/economic relationships and the competitive part against the computer, and built *Colonization* around those.

Edge In the game, you lose points when you burn Indian villages. Was that because of the US political correctness lobby?

Sid In America it's a somewhat controversial issue with the Indians and political correctness. We really didn't want to come down on one side. Historically, Indian villages were burned and this is a possibility in the game, but in the long run it really wasn't a good thing to do. You have to be careful with these issues.

Edge It is easy to avoid imposing your views on others through games?

Sid Well, that doesn't add anything to the game. If a game is trying to promote one particular philosophy then it detracts from the player being the star of the game, which is essential to a good game. I also want to try all the possibilities. I don't need everyone to agree with me and do everything my way.

Edge You've made a few bucks out of strategy games now. Does this mean that you're going to stick with the genre?

Sid Not necessarily. I tend to move around a bit with time.

Edge You've been in the industry a long time. Do you ever get bored with talking about games?

Sid No, it's my life so I enjoy talking about it. This whole trip [to Europe] is good, as I do tend to get bogged down with programming and designing. After a couple of weeks off I'm ready to go back and see what comes next.



Sid Meier doesn't believe that the PC necessarily holds the key to the future of interactive entertainment, but nor is he jumping on the next-generation console bandwagon

Edge How does Europe compare to the United States in terms of the games development environment?

Sid There's becoming less and less difference. I think that these days, with both America and Europe having a lot of PC users and their age rising, we can do more sophisticated games. It's more similar to the US market than it was five years ago. This makes things a lot easier for us for development purposes. If a game does well in America nowadays we've a pretty good idea that it will also do well in Europe. It helps us out a lot.

Edge What about British programming teams? Do you find that they're significantly different to their American peers?

Sid British programmers tend to be younger, more driven. They've got more energy. They're really up on the latest technology. British designers produce great graphics. Some of the American designers are a little older and still doing the kind of games we are well known for. We've been doing it longer so there are certain kinds of games that we like to do and we've got more associated with these games.

Edge The graphics in your games tend to be fairly minimal. Do you think that graphics don't matter?

Sid We prefer the word 'functional'. They do matter but they're not the critical part of the game. We're faced with the choice, even in the States, of doing incredible graphics that might only run on 30% of the machines out there – you need a Pentium and SVGA and that eliminates a lot of people. Or doing graphics that run on many more computers but aren't quite as amazing. Games like *Civilization* and *Colonization* aren't about overwhelming you with the look of the game. We wanted as many people as possible to have access to the gameplay. You start visualising everything in your mind anyway. No matter how good the graphics are, we're not going to be able to make it perfect. Fine, functional graphics is what we're aiming for. There is always the opportunity out there to make 'The Best Graphics Game', but after six months someone's overtaken you.

Edge So you don't see yourself getting involved in the new breed of cinematic CD-ROM games?

Sid That's not my kind of game but I can understand why people would want to do them. You have to keep the quality of the video but tie it into a good game. Only then can it have a real future.

Edge What's your opinion of the trend towards CD-ROM?

Sid In the long term I'm going to figure out how to take the best of CD-ROM but marry it with good gameplay. We're looking at something like a game with a supporting encyclopædia. Not as an interruption of the game but something to play on the side for breaks.

Edge The advent of CD-ROM means that games are getting bigger. Do you regard this as a good thing?

Sid They can either get bigger or smaller and people don't want them to get smaller so they're going to get bigger. We have Silicon Graphics workstations now and you can press a button and out comes a zillion megabytes of graphics. The problem is that games aren't getting better as fast as they are getting bigger.



Sid Meier accepts that American developers are generally more conservative, while British programmers are the ones with new ideas and the creative energy to realise them

Edge As games become more sophisticated, more realistic, the calls for censorship get louder. Do you think games should be censored?

Sid No. You get into a lot of issues about who makes the decisions and who does the censoring. I don't think they corrupt children or adults anyway. People can distinguish between fantasy and reality.

Edge What about photorealistic fantasy?

Sid Movies are photorealistic fantasy. People get blown up in those and you can still recognise the difference.

Edge Are you planning to produce any games for the new consoles?

Sid We've got a 'wait and see' approach to those. They look interesting in terms of technical abilities but it's unclear what type of players will buy those machines. We're keeping an eye on it.

Edge Videogames generally, and strategy games in particular, are very male-oriented. Can you envisage women getting more involved? It would be an ideal way for games developers to expand their market.

Sid I don't think it's something I can do much about. The games out there are pretty much designed by men and until that changes the market isn't going to change. Although women do like to play *Tetris*!

Edge Would an increase in the number of female programmers help to make games generally more accessible to women?

Sid That would be the best thing. They'd have the most insight. We can only guess. I think women are missing out – they should have the same kind of fun as we have.

Edge Many people regard the PC as the machine of the future. Is that a view you subscribe to?

Sid I wasn't a fan at first. It does everything, but nothing well. It's being constantly improved, but its biggest problem is sound. Technically we could build a great machine, but the 3DO experience shows that creating a world-beating games machine is more than just having a neat new idea. You've really got to market it, sell it hard.

Edge Do you think Trip Hawkins regrets embarking on the 3DO?

Sid Trip is not hurting. Trip still has a fine life. 3DO is still out there but it just hasn't lived up to initial projections.

Edge Is there a *Civilization 2* in the works?

Sid Not exactly. I've worked a little on a spin-off but wasn't really able to figure out how to make it easy to play or familiar. I think it can be done but I haven't worked it all out yet. There's life left in *Civilization* yet…

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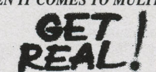
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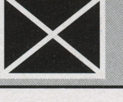
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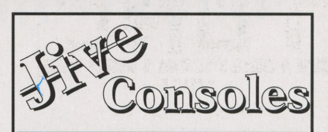
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Q **1.** How is Intel progressing in sorting out the Pentium's incompatibility problems?
2. Is *Dark Forces* going to be based on id's programming techniques, or has the graphics engine been developed completely separately?
3. Is *Chicago* going to catch on? Does it use a different programming language from *Windows* or merely improve its user friendliness?
4. How do you manage to churn out over a dozen issues and receive an award from the videogames industry without a certain Scunthorpe newsagent stocking you?

A Rogers, South Humberside

A **1.** Pentiums are compatible with all PC software written to date. Programmers will only address the issue of writing code specifically for a processor when there are enough units in existence to warrant it. It is much harder to write a game specifically to take advantage of the Pentium architecture and then downgrade it for a 486 than it is to write a game for a 486 and just run it fast using the Pentium chip's increased performance.
2. According to LucasArts, the *Dark Forces* game engine was started before the shareware version of *Doom* was released and was subsequently reworked to beat id's engine. It does bear a remarkable resemblance to it, though, with the only significant difference being your ability to look up and down, as well as left and right
3. *Chicago*, now excitingly entitled *Windows '95*, is certain to succeed because it is supported by Microsoft. To guarantee its success Microsoft is almost definitely going to can version 7 of *MS-DOS*. In programming terms, the main difference between *Windows '95* and today's *Windows* is that it takes advantage of the 32bit memory addressing available in 386DX and later chips. The system is fully multitasking, eliminates hardware conflicts and should be infinitely more stable.
4. Unlike most magazines, **Edge** isn't over-supplied. The result is that smaller newsagents often don't stock it. It may be the most widely read magazine in the games industry (including the United States) but numbers are tightly controlled.



Does this slot mean that the PlayStation is expandable? (See letter from Martin Borg)

Q I have noticed that many companies advertise in **Edge** offering a variety of positions within the software industry. However, so far I have failed to see one advertisement offering a post writing the actual manuals that accompany developers' products.

As a recent graduate, this is an area I would like to get into. I was wondering if you could offer any advice on who to write to and what my chances of success would be.

Myles Winstone, Warrington

A There are many jobs writing manuals in the games industry, although these positions are often advertised locally rather than nationally. Keep an eye on **Edge**'s recruitment pages, and there's no harm in writing off to companies to ask them how to obtain such a job.

Q **1.** Is the Sony PlayStation expandable? The Saturn has this ability via its cartridge slot. Both machines will need to have expansion ports to have any chance against Nintendo's Ultra 64.
2. Technically, the Saturn looks extremely lacklustre, and, as a devoted Sega follower I am worried by this. The specifications have been sketchy, but does **Edge** have concrete information about the Saturn's true capabilities?
3. The PlayStation boasts an overall processing ability of 800MIPS. How does the Saturn compare?
4. When will the Ultra 64 be released in Japan? Do you have any specs on this machine, and if so, when will they be available?

Martin Borg, Melbourne, Australia

A **1.** There is an expansion slot on the back of the PlayStation, hidden by a grey plastic plate, but this will probably be used for a modem connection. Sony is more likely to release a new version of the PlayStation than upgrade the original, but don't expect it for at least another four years.
2. Because the Saturn's performance falls short of the PlayStation's, Sega has never released a detailed technical specification. Your fears are also reflected in the industry to a certain extent, although the machine is still far more powerful than current gaming technology like the Jaguar and 3DO. **Edge**'s advice is, don't judge the machine until you've seen its software. An appraisal of the machine and reviews of the first titles will appear in **Edge** 17.
3. A figure of 500MIPS, not 800MIPS, was bandied around by Sony when the PlayStation was announced. However, even this number seems incredibly optimistic, and it hasn't been substantiated by detailed supporting data.
4. The Ultra 64 is set for a September release in Japan and the USA, although, as hinted in **Edge** 15, Nintendo might bring forward the release of the machine to May or June to give it a head start over the PlayStation in the US market. The spec of the machine is still unconfirmed, although one developer recently told **Edge** that in performance terms it's as far removed from the PlayStation as the Amiga is from the C64. It should be an astonishingly powerful machine, so let's hope Nintendo's proven commitment to gameplay produces some amazing games.

Q I have just purchased a Turbo Duo and I am very happy with the machine – it's amazing that it's only 8bit. I have some questions that I need answering, though.
1. Can I play Japanese (PC Engine) cards on my American Duo, or CDs and Super CDs from Japan?
2. Is there an American version of *Street Fighter II* available, or will I have to buy a Japanese game?
3. Can I use Japanese joypads and multitaps on the US system?
4. Can you recommend any suppliers of PC Engine software and hardware?

Arif Stalham, London

A **1.** Yes, but you'll need an adaptor to run Hu-Cards – only CDs are universally compatible.
2. Unfortunately, no. TTI, the American operation that handles



PlayStation *Darkstalkers* is on its way (see Alex Hardy's letter)

the Turbo Duo (the US version of the PC Engine Duo) and its software in the States, never actually released *Street Fighter II* over there.
3. Yes, they're the same.
4. Try importers like Console Concepts (0782 207151) or Raven Games (081-663 6810).

Q **1.** I recently read that the PlayStation will accept RAM cards for data storage (saves, etc). How much information can one of these cards hold?
2. Will they be included with the machine or will they be packaged with any game that needs them?
3. I've heard a lot about the amazing colour and polygon capabilities of the PlayStation, but what is its resolution?
4. Will the PlayStation include a stereo headphone socket? Someone should tell manufacturers that not all televisions are stereo.

Jim Rennie, Taunton

A **1.** and **2.** The first card available (supplied with the machine) will be 1Mbit (128K). This will be followed by other, possibly larger, models. The cards will be used mainly for roleplayers, although the technology gives any game the opportunity to include a back-up facility.
3. It ranges from 256x224 to 640x480.
4. No, but Sony might tackle this problem by releasing an adaptor.

Q **1.** I read in your magazine that 24bit (16.7 million) colour mode is needed to display the 1 million true colours that the eye can see. How is this? As 20bit colour would produce over 1 million colours, why wouldn't this do?
2. If any more colours over 16.7 million wouldn't make any difference to the quality of the image, then obviously only increasing the resolution would improve it. What is the highest resolution achievable on any machine at present – and could it (theoretically) be increased? If so, would the increase provide any visible improvement?
3. In **Edge** 1 you mentioned that the £3 cover price of the magazine was just a trial figure, to see what size of market you were catering for. Does its continuation mean that you're not happy with your sales? I think £5 is too steep for back issues – and many of my friends agree. After all, ten people forking out £4 for a back issue is much more desirable than five or six forking out £5. I think the content and sheer quality of the magazine makes it worth £5 and raises it above other (more childish) titles, but people would be a lot happier catching up with missed issues if they were to get change from a fiver.

W Noble, Nottingham



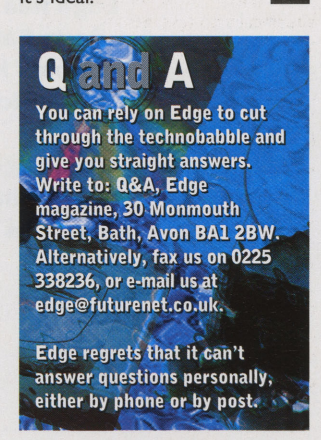
Arif Stalham wants to know if it's possible to play Japanese PC Engine Duo cartridge software on an American Turbo Duo (above)

A **1.** The eye is capable of simultaneously resolving just over 1 million colours across the visible spectrum. However a 16 million colour palette is required to fully cover this range. Similarly, the human eye can only distinguish between around 16 shades of grey at the same time, but a 'true' black-and-white image still needs a palette of 256 greys to depict those 16.
2. On the PC, some monitors offer resolutions as high as 1024x768 in SVGA, but most games systems rely on lower resolutions, like 256x224. There's a gradual switch to higher resolutions, though. Many PlayStation games will take advantage of the machine's 640X480 mode.
3. **Edge** is doing very nicely, thank you, with a circulation of 30,633 confirmed by ABC (Audit Bureau Of Circulation). Because it uses high-quality paper and is often printed with special inks (like the silver 'fifth colour' in this issue, for example) **Edge** costs more to produce than most magazines, and this is reflected in its cover price. As for back issues, it's cheaper to buy two – that way they only cost £4 each.

Q **1.** Is the beat 'em up that Capcom intends to release on the PlayStation and Saturn *Darkstalkers*? Are either/both of these machines capable of a perfect conversion?
2. Will Sega produce a compilation of *Sonic 1, 2, 3, Sonic CD, Sonic And Knuckles* and *Sonic Spinball* for the Saturn? Even with improved graphics and sound, all these games could fit onto one CD, and if the sales of *Mario All-Stars* are any indication, they would be a massive hit.
3. Can we expect PlayStation conversions of successful PC CD-ROM games?
4. I read in a recent issue of an American videogames magazine called EGM2 that Sega has plans to produce an adaptor for the Saturn that will allow it to run Mega Drive, Mega CD, 32X CD and 32X cartridge games. Can you verify this?
5. In your December issue, will you run a feature on the Saturn and PlayStation showing and comparing final hardware specs, with pictures of finished casings plus lists and previews of planned software, reviews of games available at launch and your opinion on which machine is likely to succeed?
6. Why did you scoff at the Super Game Boy? Because of this device, I can now play many classic Game Boy games on my TV in colour, with stereo sound through my SNES. I fail to see how you can become all tearful and nostalgic about the 'good old days' of gameplay and at the same time sneer at the Super Game Boy.

Alex Hardy, Lancashire

A **1.** There is a PlayStation version of *Darkstalkers* (called *Vampire* in Japan) in the works, but Capcom hasn't yet announced what titles will make it onto the Saturn. Both machines have excellent sprite handling abilities, and there's no reason why spot-on conversions shouldn't be possible.
2. *Sonic* is on the way for the Saturn, although in what form is anybody's guess (with luck, he'll get speared by the Saturn's platform hero, *Clockwork Knight*).
3. Yes, Sony is developing a set of APIs that will make the transfer of PC CD-ROM titles to the PlayStation a breeze. This should mean that top games like *Little Big Adventure* (see page 62) will be winging their way onto the system even faster.
4. No, but it's thought that Sega plans to make the US Saturn at least compatible with 32X games.
5. If you mean the issue that's on sale on 22 December (February cover date), then there will indeed be a full breakdown of both machines as well as a round-up of their software.
6. The Super Game Boy is, it has to be said, an odd device. But for those games that require staring at the Game Boy's tiny screen for hours on end (*Zelda: Link's Awakening*, for instance) it's ideal.



next month

PlayStation SegaSaturn PlayStation SegaSaturn PlayStation SegaSaturn

Edge has monitored the evolution of both the Sony PlayStation and the Sega Saturn more closely than any other magazine. Next month, both systems hit the Japanese high street. Edge reports from Tokyo on these historic events, and finally gets to grips with the finished hardware.

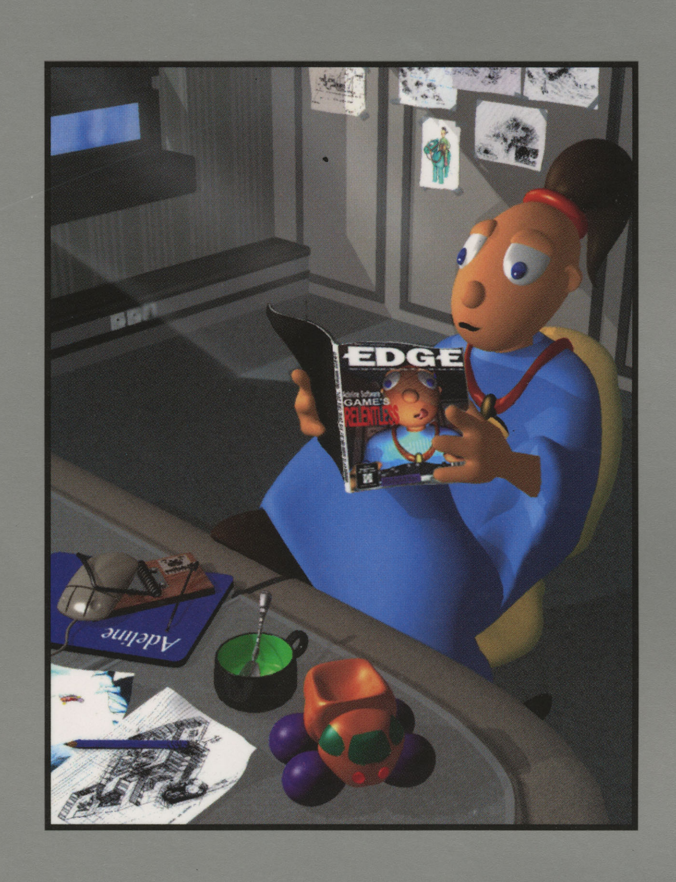
Also, Edge joins the Japanese press at the Shoshinkai festival in Tokyo, where Nintendo will be revealing its long-awaited Virtual Boy VR system as well as showcasing graphic demos of its first software for the Ultra 64

EDGE 17

Thursday 22 December

Continued Edge 17




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